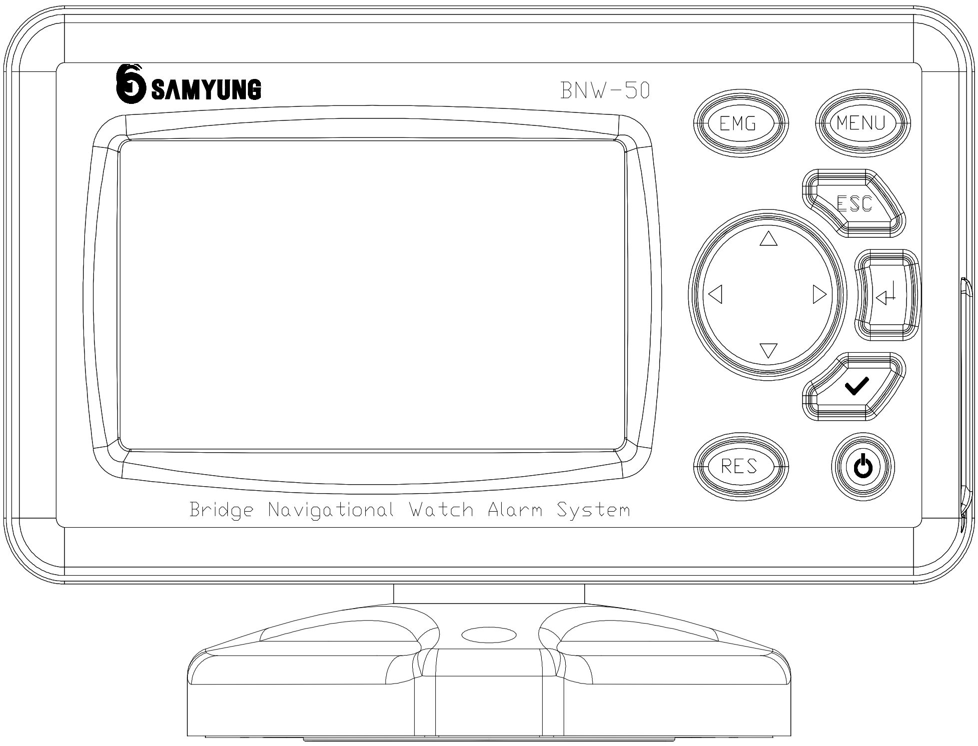
SAMYUNG ENC

USER MANUAL

BNW - 50

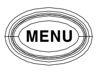
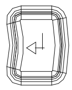
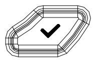
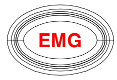
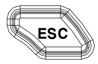
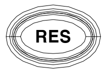
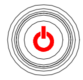
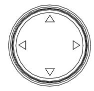
Bridge Navigational Watch Alarm System



SAMYUNG ENC

Rev. M00-0481-01

QUICK USER MANUAL

NAME	[MENU]	[ENT]	[CHECK]	[EMG]	[ESC]	[RES]	[POWER]	[DIRECTION]
BUTTON								

1. PASSWORD SETTING

① When initially turned on, password setting shows up.

② Using [ENT], [DIRECTION], insert the password.

③ When you press [CHECK], it will ask if you wish to save.

④ Use [DIRECTION] to select "YES", then press [ENT], this will save the password and at the same time it will move to the menu screen.

2. OPERATION SETUP

① After press [MENU], insert the password, it will move to the menu screen.

② Use [DIRECTION] and [ENT] to select **[OPERATION SETUP]** on the MENU.

③ Use [ENT] and [DIRECTION] to select the **OPERATIONAL MODE (MANUAL OFF, MANUAL ON, AUTOMATIC), Dormant period (3~12 minutes), delay between the 2nd & 3rd stage alarm (90 seconds~180seconds).**

④ After the setting up, press [MENU], and you will be asked if you wish to save.

⑤ Select "YES" and press [ENT] to save and it will move to the menu screen.

※ Initial setup: Operational Mode = MANUAL OFF, Dormant period=3 mins
The delay between the 2nd & 3rd stage alarm =90 seconds

3. SELF TESTING (If needed)

① After press [MENU], insert the password, it will move to the menu screen.

② Use [DIRECTION] and [ENT] to select **[SYSTEM SETUP] → [SELF TESTING]** on the MENU.

③ Use [DIRECTION] and [ENT] to select the alarm and you can check the Correct operation of the connected reset and alarm units.

④ After the testing, press [ESC], and it will move to **[SYSTEM SETUP]** screen.

4. CHANGE THE PASSWORD (If needed)

① Go to **[SYSTEM SETUP]** from MENU.

② Select " **CHANGE PASSWORD** " then press [ENT], new password required.

③ Insert the password then press [CHECK], and then you will be asked if you wish to save.

④ Select "YES" then press [ENT], will change the password and move to **[SYSTEM SETUP]** screen.

CAUTION

1. This BNWAS can be switched ON/OFF or settings can be changed with password, therefore only authorized person (captain) can change or switch ON/OFF the BNWAS.

2. Before operating the machinery, you must read and be fully aware of the safety signs and the guidelines.

3. In case of machine breakdown due to the heat exposure or use of faulty power cable which can cause a serious damage, is not covered by A/S.

4. Please do not disassemble the equipment since it is equipped with electric circuit that can be only handled by experienced technician. Exposure of the display screen to the UV light may cause life-shortening of the LCD. Avoid overheating LCD by adjusting the contrast except for the extreme dark display. The problem caused by the overheating may not be solved after the temperature has been cooled down

SIGN	DESCRIPTION
	The PCB used in this equipment is produced under protected environment of electrostatic discharge. This is because the most of the semiconductor equipment used in the PCB can be damaged easily by the electrostatic discharge.
	You must prevent from damaging the equipment when operating, as it can be easily damaged by the electrostatic discharge. Only experienced technician must work on the circuit of the equipment as it is sensitive to electrostatic discharge. Disassemble of this equipment is only allowed to the technician authorized by our company.

Cleaning of the display screen
The surface of the screen is coated with non-reflective material, therefore it is important to clean and take meticulous care when cleaning. Please follow the instructions below. Use the cleaning spray (same as computer monitor), microfiber. Fold the tissue or the microfiber three times, and wet the edge of the fiber with the spray. Use your index finger to wipe the monitor. The screen may get damaged if the tissue is not wet enough.

When you require technical assistance, please contact the nearest SAMYUNGENC Store or the A/S center.

---- CONTENTS ----

CHAPTER 1 ABOUT BNWAS

The purpose of a bridge navigational watch alarm system is to monitor the bridge activity and detect operator disability which could lead to marine accidents. The system monitors awareness of the Watch officer and automatically alerts the Master or another qualified person if for any reason watch officer becomes incapable of performing watch officer's duties. This purpose is achieved by series of indications and alarm to alert first the watch officer and, if he is not responding, then to alert Master or another qualified person. Additionally, the BNWAS provide the watch officer with means of calling for immediate assistance if required. BNWAS must operate whenever heading or track control system is interlocking unless prohibited by the captain.

Maritime Safety Committee (MSC) from IMO requires BNWAS that meets the new IMO performance standard requirement.

Existing Vessel requires to install the equipment before the first inspection after the below date.

▷ Existing passenger ship and Vessels under 3000t: 1st JULY 2012.
▷ Existing vessels over 500t: 1st JULY 2013..
▷ Existing vessels over 150t: 1st July 2014.

New Vessel must install the equipment by:

▷ New Vessels over 150t, and vessels constructed after the 1st July 2011 must be equipped with Bridge Navigational Watch Alarm System (BNWAS).

The equipment complies below standards.

- **IMO A.694(17)** : General desired term for vessel radio equipment and electronic navigational support
- **IMO A.830(19)** : Code for alarm and command
- **IMO MSC. 128(75)** : Performance standard for BNWAS
- **IMO MSC/Circ. 982** : Layout and guidelines for bridge equipment's ergonomic standards
- **IEC 62616** : Method to test the BNWAS' technical characteristic
- **IEC 60945** : Test method and result on marine navigation and radio communication equipment
- **IEC 62288** : Test method and result on marine navigation information display desired terms
- **IEC 61162** : Marine navigation and radio communication equipment system digital interface

CHAPTER 2 OPERATION OF BNWAS

This BNW-50's setting is only adjustable by using password, therefore only authorized person (captain) can switch ON/OFF and change the setting of the system.

However, when BNWAS is active with alarm, mode setting is not adjustable.

2.1 OPERATIONAL MODES

2.1.1 MANUAL ON MODE

On this mode, BNW-50 operates constantly.

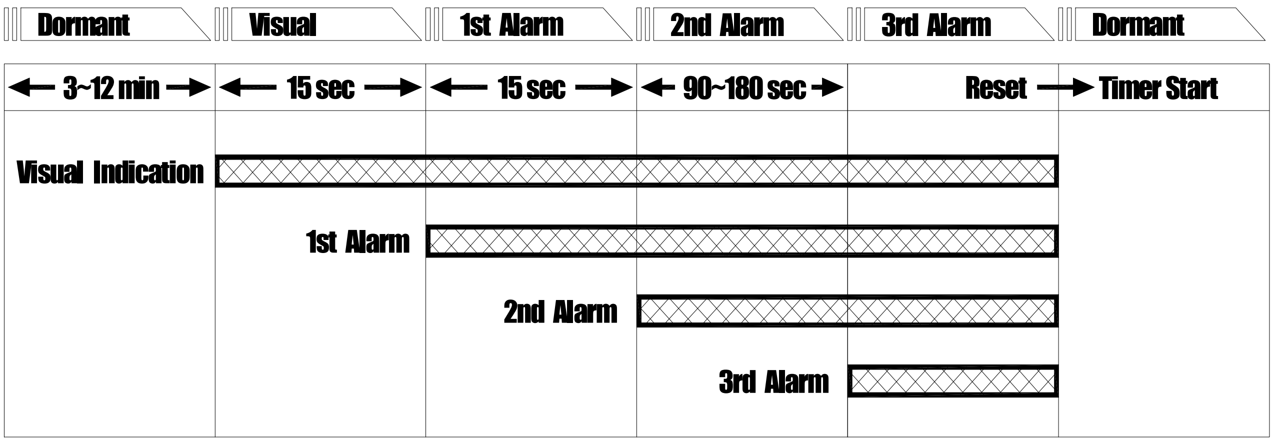
2.1.2 MANUAL OFF MODE

On this mode, BNW-50 does not operate under any circumstances.

2.1.3 AUTOMATIC MODE

On this mode, BNW-50 operates automatically whenever the ship's heading or track control system is activated and inhibited when this system is not activated.

2.2 OPERATIONAL SEQUENCE OF ALARMS



2.2.1 DORMANT PERIOD

Once operational, the alarm system remains dormant for a period of between 3 and 12 min.

At the end of this dormant period, the alarm system initiates a visual indication on the bridge.

2.2.2 VISUAL INDICATION

If not "RESET" during this dormant period (3~12 minutes), visual indication will be initiated for the next 15 seconds. This gives time to "RESET" before the 1st stage bridge audible alarm is initiated. The visual indication initiated at the end of the dormant period will take the form of a flashing indication.

2.2.3 1ST STAGE BRIDGE AUDIBLE ALARM

If not "RESET", the BNW-50 will additionally sound a 1st stage bridge audible alarm on the bridge 15 seconds after the visual indication is initiated. This audible alarm is installed on the bridge and must be able to wake the watch officer. The visual indication and 1st stage bridge audible alarm will activate and can be turned off by resetting the timer by inputting "RESET".

2.2.4 2ND STAGE REMOTE AUDIBLE ALARM

If not "RESET", the BNW-50 will additionally sound a 2nd stage remote audible alarm in the back-up officer's and/or Master's location 15 seconds after the 1st stage bridge audible alarm is initiated. Visual indication, 1st stage bridge audible alarm and 2nd stage remote audible alarm will activate and can be turned off by resetting the timer by inputting "RESET".

2.2.5 3RD STAGE REMOTE AUDIBLE ALARM

If not "RESET", the BNW-50 will additionally sound a 3rd stage remote audible alarm at the locations of further crew members capable of taking corrective actions 90 seconds after the 2nd stage remote audible alarm is initiated. The delay between the 2nd and 3rd stage remote audible alarm may be set to a longer value on installation, up to a maximum of 3 min, to allow sufficient time for the back-up officer and/or Master to reach the bridge. Also, until "RESET" is inputted, all alarms stays activated.

2.3 RESET FUNCTION

The reset function shall, by a single operator action, cancel the visual indication and all audible alarms and initiate a further dormant period. If the reset function is activated before the end of the dormant period, the period shall be re-initiated to run for its full duration from the time of the reset.

BNW-50's "RESET" can be inputted in the following ways.

- Manual way of using "RESET BUTTON" on the bridge.
- Automatic way of using 'Motion sensor" that detects the movement on the bridge.

2.4 EMERGENCY CALL

BNW-50 has built-in emergency call function. If this button is pressed down, 2nd stage remote audible alarm is immediately initiated, and if no action is taken then 3rd stage remote audible alarm will initiate. Watch officer can call for help using this function if needed.

CHAPTER 3 PRODUCT SPECIFICATION

3.1 DISPLAY UNIT (BNW-50)

SCREEN SIZE .... 4.3 INCH TFT COLOR LCD, 480 X 272 PIXELS
POWER CONSUMPTION .... 130mA, POWER SAVE MODE 70mA (24V DC)
SIZE .... 129 x 183 x 113.5 mm (H x W x D)
WEIGHT 0.5Kg
OPERATION TEMPERATURE .... -15 ℃ ~ 55 ℃

3.2 PROCESSOR UNIT (BNW-51)

AC POWER SUPPLY .... 110V / 220V AC
DC POWER SUPPLY .... 24V DC
POWER CONSUMPTION 130mA
SIZE .... 221 x 165 x 95 mm (H x W x D)
WEIGHT 1.5Kg
OPERATION TEMPERATURE .... -15 ℃ ~ 55 ℃
INTERFACE ... Output DC12V power supply for motion sensor, reset unit and reset Input
Input interface of operating heading or track controller system
Input the RS-422 communication NMEA data (reset, alarm, etc)
Input the interface for the external emergency call device
Output the alarm signal for reset and alarm unit
Output the RS-422 communication NMEA data for black box (VDR)
Output the alarm interface for equipment failure
Output DC24V power supply and Input/ Output RS-232 communication for display unit

3.3 RESET UNIT (BNW-52/52W)

POWER CONSUMPTION .... max 34mA / unit (24V DC)
SIZE .... 126x90x30 mm (H x W x D)
WEIGHT .... 0.2Kg (FLUSH TYPE), 0.5Kg (DESK TYPE), 0.5Kg (WATERTIGHT TYPE)
OPERATION TEMPERATURE .... -15 ℃ ~ 55 ℃
LEVEL OF WATER RESISTANCE .... IP67 (WATERTIGHT TYPE)
LEVEL OF SOUND .... OVER 75 dB
FUNCTION .... Reset, visual indication, 1st stage bridge audible alarms are combined (You may choose one function if you wish to).

3.4 ALARM UNIT (BNW-53)

POWER CONSUMPTION	.... max 30mA / unit (24V DC)
SIZE	.... 126x90x30 mm (H x W x D)
WEIGHT	.... 0.2Kg (FLUSH TYPE), 0.5Kg (DESK TYPE)
OPERATION TEMPERATURE	.... -15 ℃ ~ 55 ℃
LEVEL OF SOUND	.... OVER 75 dB

3.5 MOTION SENSOR (DND-300M)

POWER CONSUMPTION	.... OPERATING = 26mA / unit, STAND-BY= 17mA / unit (12V DC)
DETECTION METHOD	.... Quad-element PIR and microwave pulse Doppler
MW frequency	.... 10.525GHz
SIZE	.... 115 x 61 x 37.5 mm (H x W x D)
WEIGHT	.... 120g (BRACKET EXCLUDED)
OPERATION TEMPERATURE	.... -15°C~ 55°C
DETECTIVE ANGLE	.... 90°
DETECTIVE RAGE	.... 5m
PRE-HEATING TIME	.... 1 MINUTE

※ TOTAL POWER CONSUMPTION FOR STANDARD COMPONENTS

Display Unit (BNW-50)	.... 1 EA
Processor Unit (BNW-51)	.... 1 EA
Reset Unit (BNW-52/52W)	.... 3 EA
Alarm Unit (BNW-53)	.... 7 EA
Motion Sensor (DND-300M)	.... 2 EA
TOTAL (24V DC)	**............... APPROX 0.6A**

3.6 COMPONENTS

3.6.1 BNW-50 SPECIFICATION

NO	NAME	MODEL NAME	QUANT	REMARK
1	Display unit desktop	BNW-50	1 SET	Bracket, protection cover included
1-2	Display unit installation accessory	BNW-50-A	1 SET	
1-3	USER MANUAL	BNW-50-MK	1 EA	M00-0481-01
2	Processor unit desktop	BNW-51	1 SET	
2-2	Processor unit installation accessory	BNW-51-A	1SET	
3	Reset unit desktop	BNW-52	1 SET	Additional installation available
3-2	Reset unit installation accessory	BNW-52-A	1 SET	Flush type
4	WATERTIGHT reset unit desktop	BNW-52W	2 SET	
4-2	WATERTIGHT reset unit install.	BNW-52W-A	2 SET	
5	Alarm unit desktop	BNW-53	7 SET	Additional installation available
5-2	Alarm unit installation accessory	BNW-53-A	7 SET	Flush type
6	Motion sensor (installation accessory included)	DND-300M	2 SET	Additional installation available

3.6.2 BNW-50 OPTION SPECIFICATION

1	Desk type bracket	BNW-B	1SET	Desk type
2	Desk type bracket install. accessory	BNW-B-A	1SET	Desk type
3	Reset unit, motion sensor install. cable	UL2464-6C-24AWG	1SET	Optional length
4	WATERTIGHT reset unit install. cable	UL2464-6C-20AWG	1SET	Optional length
5	Alarm unit install. Cable (Small)	UL2464-2C-20AWG	1SET	Optional length
6	Alarm unit install. Cable (Large)	CVV-SB 1.25SQMM X 2C	1SET	Optional length

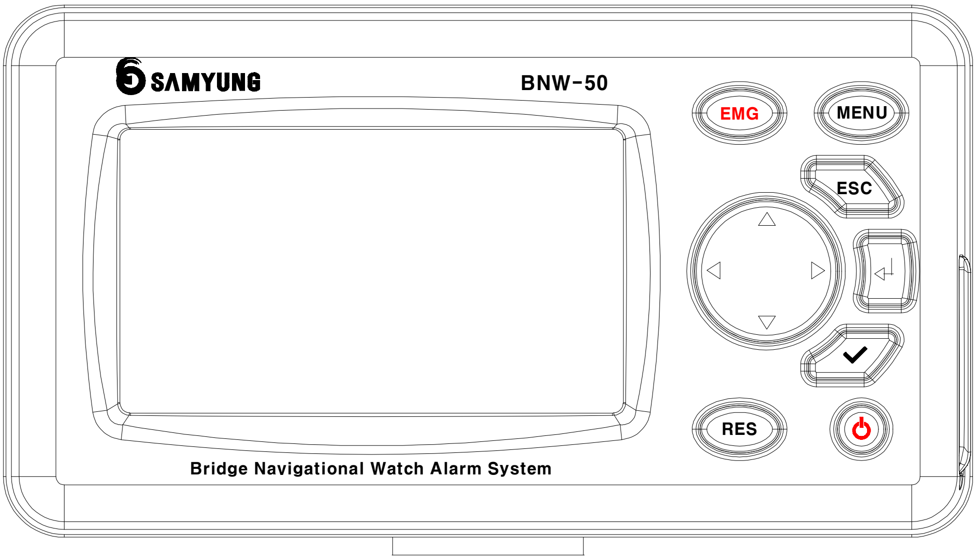
CHAPTER 4 BNW-50 (DISPLAY UNIT)

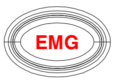
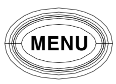
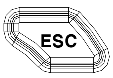
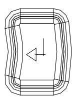
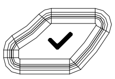
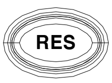
- Rated input voltage DC 24V

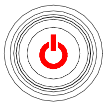
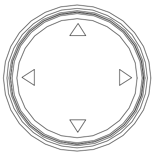


(NOTE) Program version may change without notice for performance improvement.

4.1 BUTTONS



Button	Function	Note
	Pressing down this button will activate the emergency call function. Once more pressing down this button will deactivate the emergency call.	EMERGENCY CALL
	Used to get into the menu function and message will appear if you wish to save after the setup.	MENU
	Brings you back to the previous page.	ESCAPE
	Enter key allows you to select the menu or the individual menu.	ENTER
	Used to verify the password.	CHECK
	Reset input function activates.	RESET

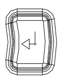
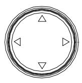
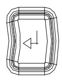
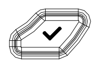
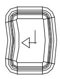
	System stops operating and goes into sleep mode by pressing this button and entering the password. In order to deactivate the sleep mode, press this button again and enter the password.	Sleep mode
	- Operation screen Left, Right : Adjust the brightness of LCD UP, Down : Key sound ON/OFF - Otherwise Used to move into the selected function or change the setting.	DIRECTION

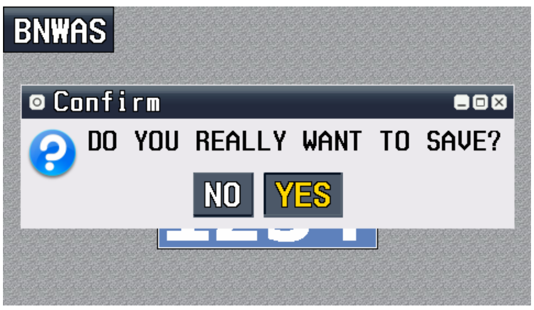
4.2 SETTING PASSWORD

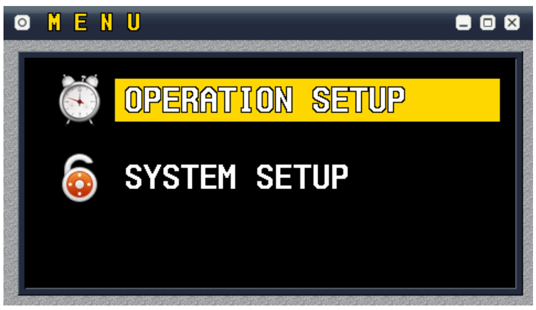
Once power is connected to the equipment, this screen will show. Captain may set the password that he should only know.



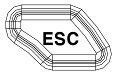


When entering password  ->  (select numbers) ->  ->  message will appear if you wish to save, select " YES ", And press  again then will move to the operation screen.

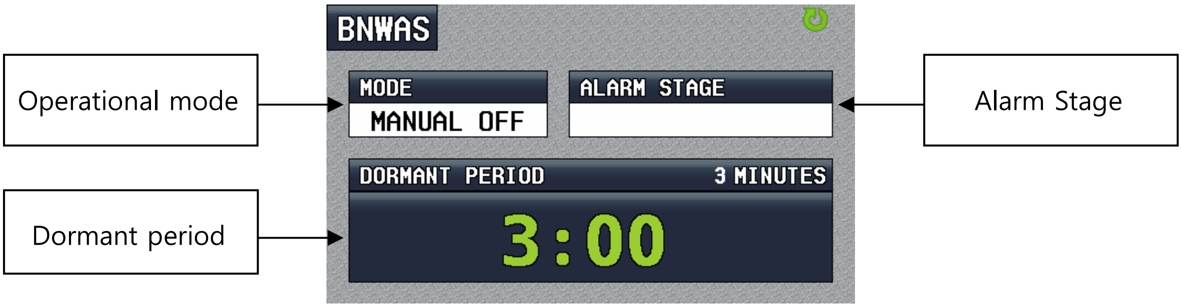




4.3 OPERATION SCREEN

BNW-50's current operational status appears on the screen. From menu, press 

then will move to the operation screen.

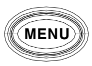


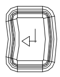
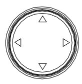
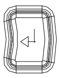
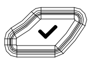
4.4 MENU

Adjusting the fundamental setup of BNW-50 can be done on the Menu. Password is required when entering into the menu therefore adjusting the setting can be only done by authorized person (captain).

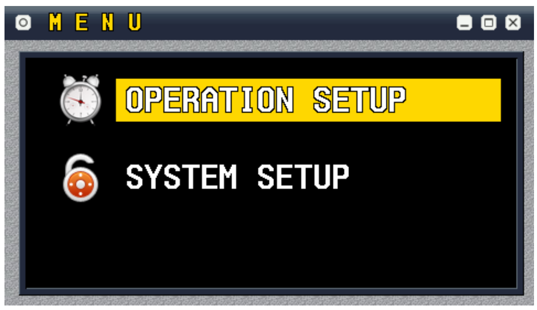
● Checking the Password

In order to get to the menu, password is required.

When 

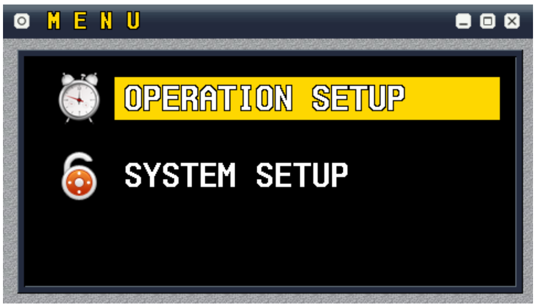
is pressed the **PASSWORD** screen appears, then use  and  to insert numbers, then  ->  leads to the menu screen.



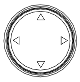
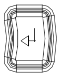


※ When the alarm is initiated, you cannot get an access into the menu and if alarm is initiated in the middle of the setup process, it will take you to the operation screen.

4.4.1 OPERATION SETUP

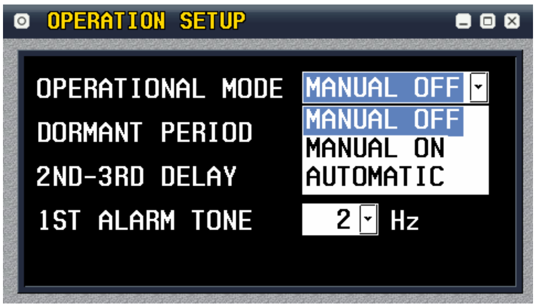


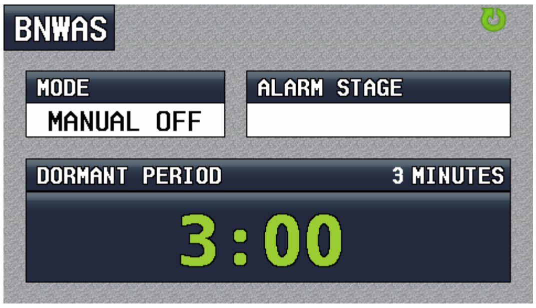
You can change and save the Operational mode, the dormant period, the delay between the 2nd & 3rd stage alarm, the tone of 1st stage bridge audible alarm.

All functions can be changed by using  and  buttons.

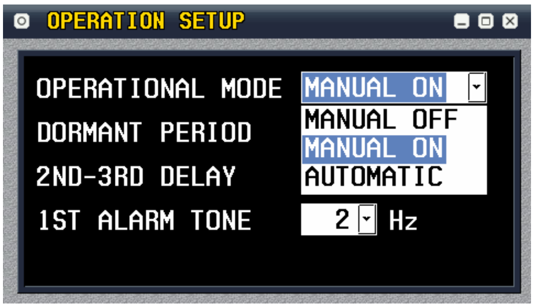
- **Operational mode**

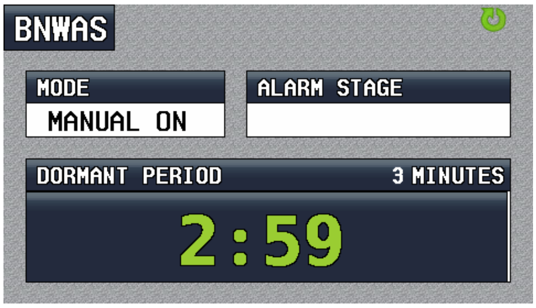
1) **MANUAL OFF**: BNW-50 does not operate under any circumstances. And it shows " **MANUAL OFF** " for MODE, on the operation screen.



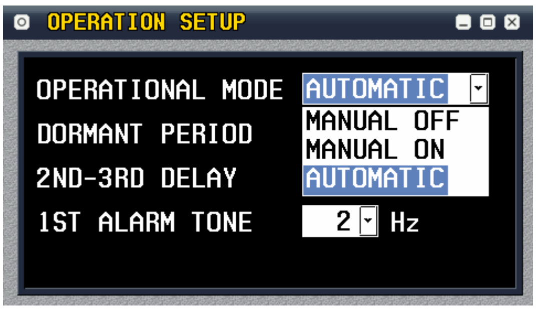


2) **MANUAL ON**: BNW-50 operates constantly. And it shows " **MANUAL ON** " for MODE, on the operation screen.



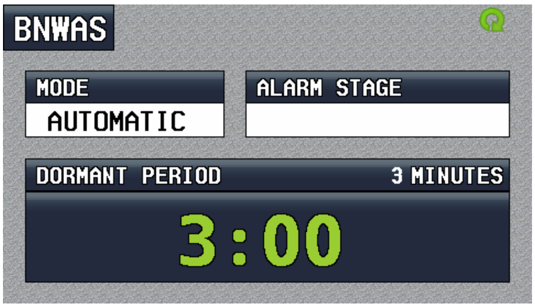


3) **AUTOMATIC**: BNW-50 operates automatically whenever the ship's heading or track control system is activated and inhibited when this system is not activated. And it shows " **AUTOMATIC** " for MODE, on the operation screen. (Refer to 6.8 INPUT FOR REMOTE ACTIVATION)

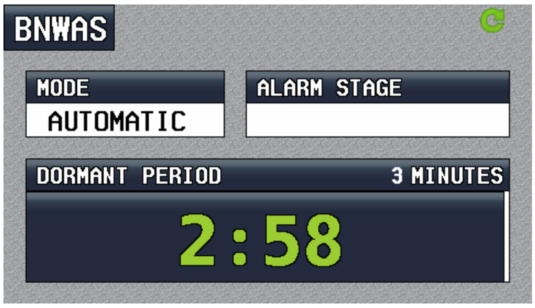


Activated : The dormant period timer will be operated.

Deactivated : The dormant period timer will not be operated.



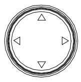
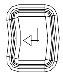
ACTIVATED

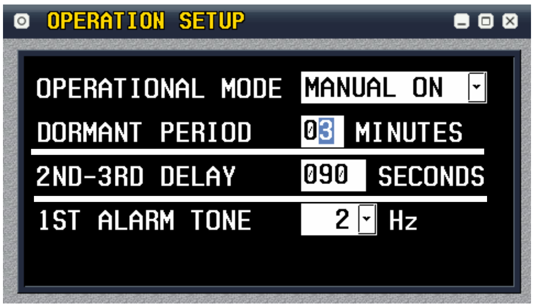


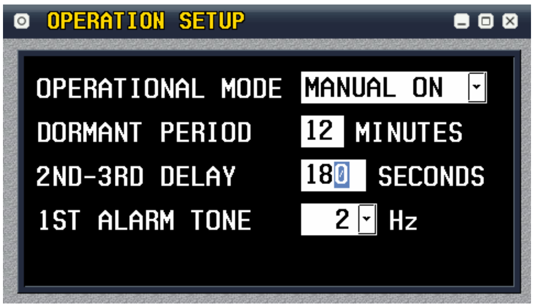
DEACTIVATED

- **The dormant period and The delay between the 2nd & 3rd stage alarm**

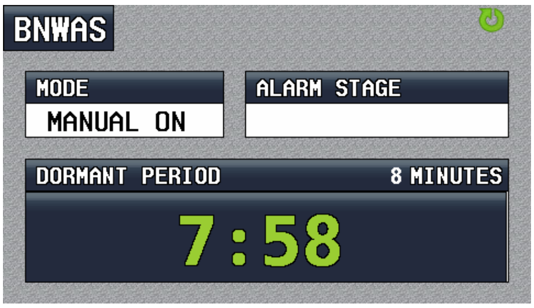
You can control the dormant period (3~12minutes) and the delay between the 2nd & 3rd stage alarm (90~180 seconds).

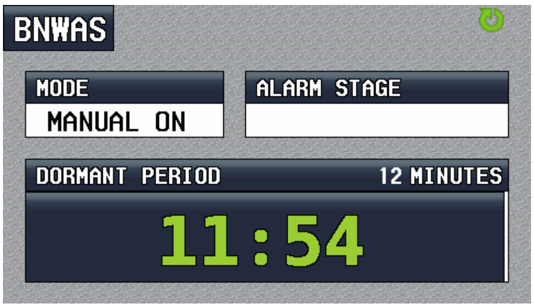
Go onto the [OPERATION SETUP] of the menu by inserting the password. By using  and  buttons, the setup time will be changed.





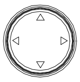
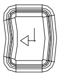
Also, on the operation screen of the display unit (BNW-50) will always show the value of dormant period.

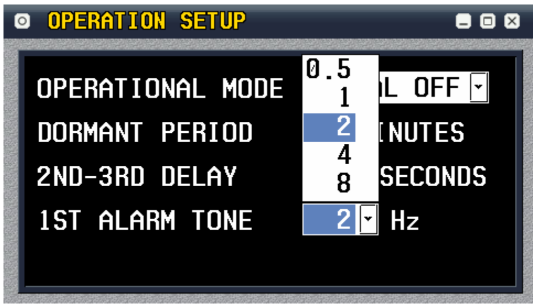


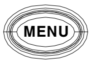
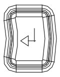


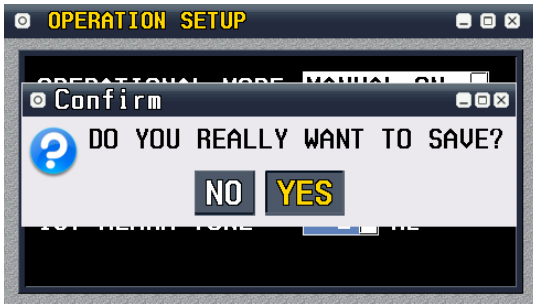
● **The period of 1st stage bridge audible alarm Tone.**

You can change the Reset unit (BNW-52/52W)'s period of 1st stage bridge audible alarm tone by using this function.

By using  and  buttons, you can change the period of the alarm tone.

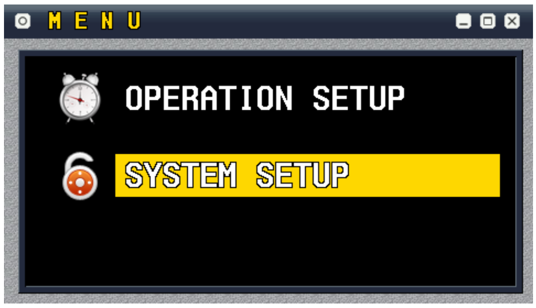


● After changing the settings press , then you will be asked if you wish to save. Press " YES " then  to save.



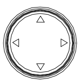
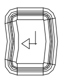
4.4.2 SYSTEM SETUP

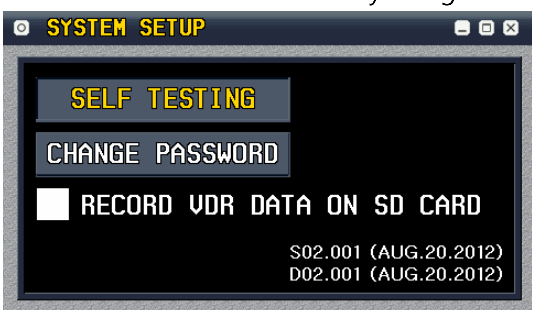
On this menu, you can check the version, self testing, change password, record VDR data on SD card.

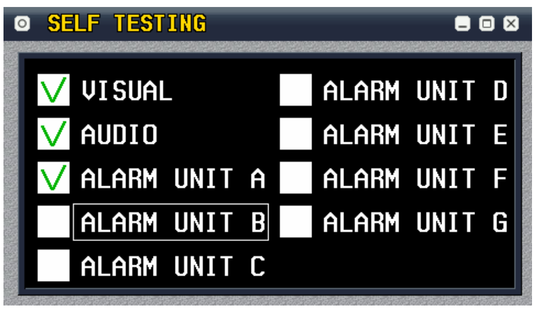


● **Self Testing**

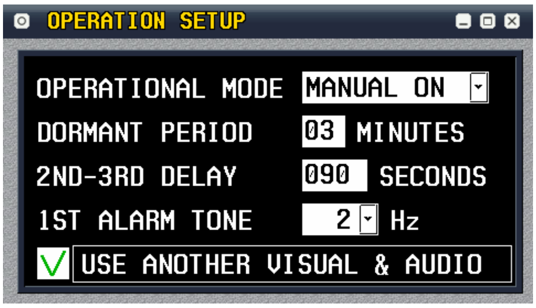
By using this function, you can check that the reset and alarm units operate properly after installation. In other words, You can check the visual indication, 1st stage bridge audible alarm of the reset units and remote audible alarm of the connected alarm units immediately.

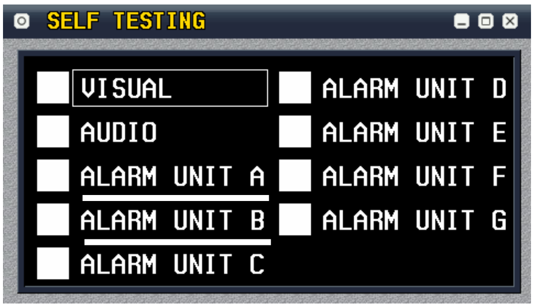
Move cursor to the desired item by using  then press , this will activate the alarm.

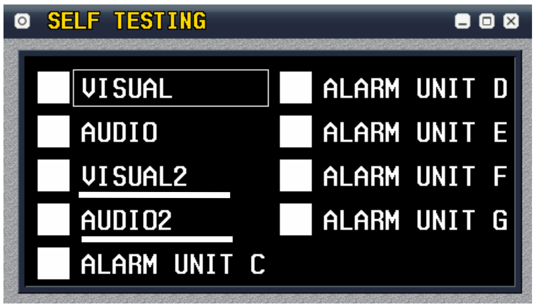




※ However, if setting by use the additional visual indication and 1st stage bridge audible alarm, The ALARM UNIT A and B will change to the each visual indication and 1st stage bridge audible alarm.
(Refer to 4.5.1 and 4.5.2)

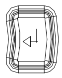


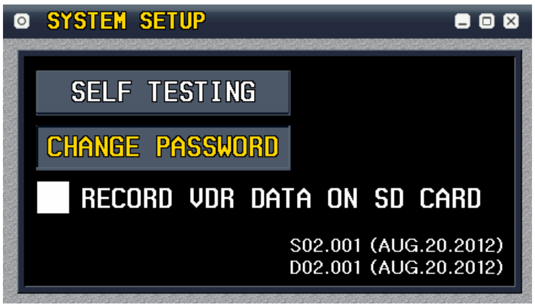


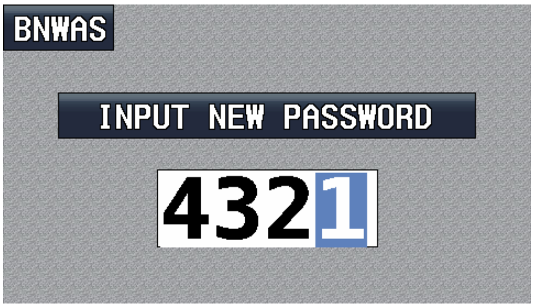


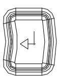
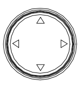
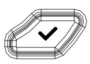
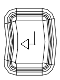
● Change Password

When the password is exposed to others, the captain can change the password at any time using this function.

Move the cursor to " **CHANGE PASSWORD** " then press  to change the password, and you can see the **INPUT NEW PASSWORD** screen.

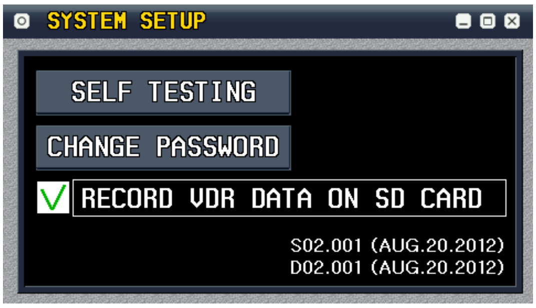




Use  and  to input the new password then press  and you will be asked if you wish to save. Select "YES" and press , then the new password is saved and you will be moved to the [SYSTEM SETUP] screen.

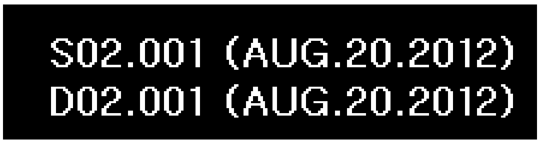
● **Saving the VDR data by using the SD card (Record VDR data on SD card)**

After inserting the SD card, by using and , select the " **Record VDR data on SD card** " and save by pressing . Then the " **BNWAS_SAMYUNGENC_VDR.txt** " file will be created in the SD card and at the same time VDR data will be saved in the file.



● **Version Check**

S02.001 (AUG.10.2012) and **D02.001 (AUG.10.2012)** shown on the right side means the version of the each processor unit (BNW-51) and display unit (BNW-50).

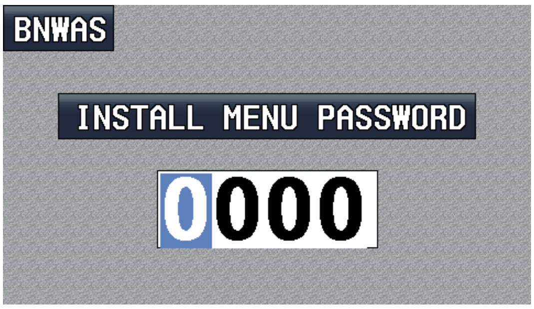


4.5 INSTALLATION MENU

At the installation, adjusting the overall setup of BNW-50 can be done on the Installation Menu. Installation menu Password only known the installers is required when entering into the installation menu. Therefore adjusting the setting can be only done by authorized person (installers).

● **Checking the Installation Menu Password**

In order to get to the Installation menu, Password is required. When and buttons are pressed down for 2 seconds at the same time the **INSTALL MENU PASSWORD** screen appears, then use and to insert numbers, then -> leads to the Installation menu screen.

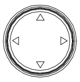
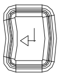




※ <u>**However, the password for Setup Menu is closed to the users, thus person who installs the equipment should contact the nearest SAMYUNGENC Store or the A/S center to receive the password information prior to the installation.**</u>

4.5.1 OPERATION SETUP



You can change and save the Operational mode, the dormant period, the delay between the 2nd & 3rd stage alarm, the tone of 1st stage bridge audible alarm, use the additional visual indication and 1st stage bridge audible alarm. All functions can be changed by using  and  buttons.

- **Operational mode**

- Refer to 4.4.1 OPERATION SETUP (page 17)

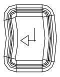
- **The dormant period and The delay between the 2nd & 3rd stage alarm**

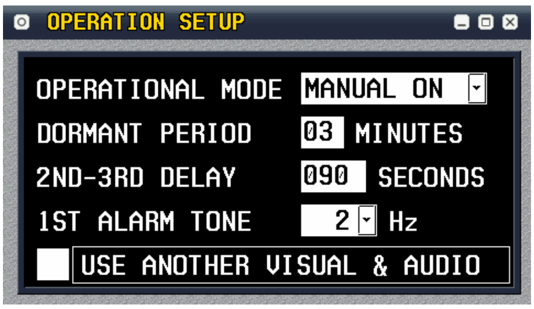
- Refer to 4.4.1 OPERATION SETUP (page 18)

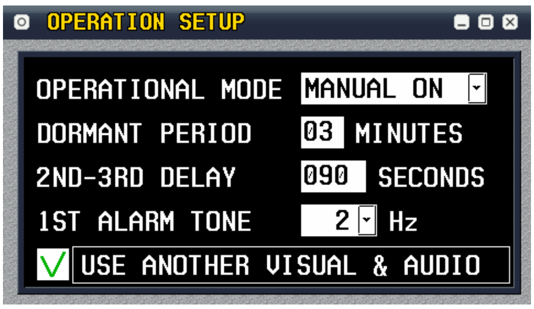
- **The period of 1st stage bridge audible alarm Tone**

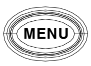
- Refer to 4.4.1 OPERATION SETUP (page 19)

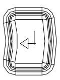
- **Use the additional visual indication and 1st stage bridge audible alarm**

When using the additional reset unit on this equipment, through the Alarm Unit A & B interface terminal of the processor unit (BNW-51), you can activate the visual indication (VIS) or the 1st stage bridge audible alarm (AUD) same as the standard reset unit terminal. Move the cursor to the [USE ANOTHER VISUAL & AUDIO] then press  , then you may decide the use of the additional visual indication and 1st stage bridge audible alarm terminal. (Refer to 4.5.2 SETUP ALARM UNITS)

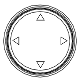
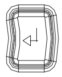




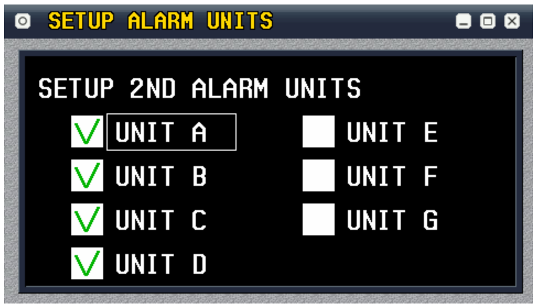
- After changing the settings press 

, then you will be asked if you wish to save. Press " YES " then  to save.

4.5.2 SETUP ALARM UNITS

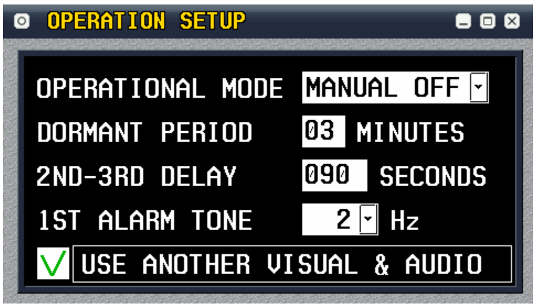
On this menu, you may select the 2nd & 3rd stage remote audible alarm of the each processor unit's interface terminal ALARM UNIT A~G by using  and . Checked boxes on the below screen means activating the 2nd stage remote audible alarm, and the rest means activating 3rd stage remote audible alarm.

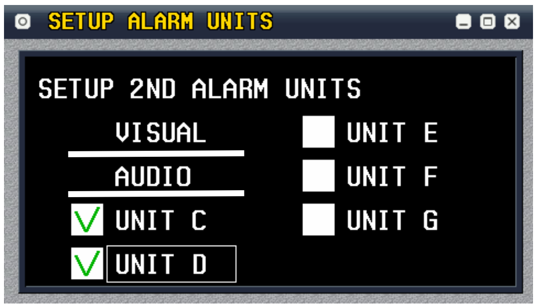




- Activate (ON) 2nd stage remote audible alarm : ALARM UNIT A, B, C and D
- Activate (ON) 3rd stage remote audible alarm : ALARM UNIT E, F, and G

● When using the additional reset unit on this equipment, through the Alarm Unit A & B interface terminal, you can activate to the visual indication (VIS) or the 1st stage bridge audible alarm (AUD) same as the standard reset unit terminal.

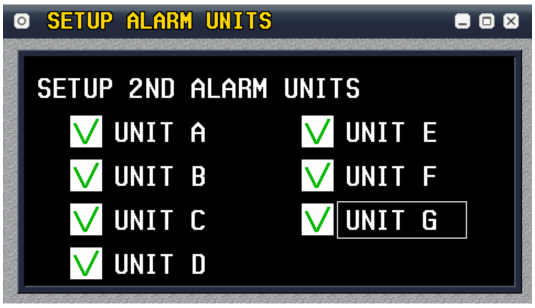


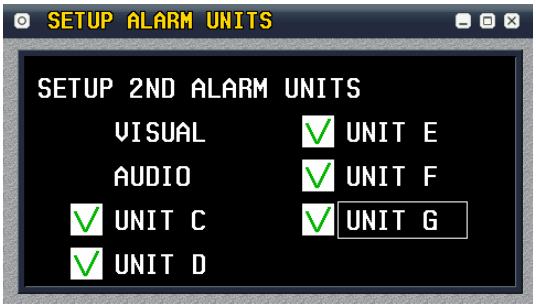


- Activate (ON) the visual indication : ALARM UNIT A → VISUAL
- Activate (ON) the 1st stage bridge audible alarm : ALARM UNIT B → AUDIO
- Activate (ON) the 2nd stage remote audible alarm : ALARM UNIT C, D
- Activate (ON) the 3rd stage remote audible alarm : ALARM UNIT E, F, and G

● In vessels, the second or third stage remote audible alarms may sound in all the above locations at the same time. If the second stage audible alarm is sounded in this way, the third stage alarm may be omitted.

※ If used by omit the 3rd stage remote audible alarm, all the connected alarm units must select to 2nd stage remote audible alarm as the below screen.





- After changing the settings press MENU, then you will be asked if you wish to save. Press " YES " then ↵ to save.

4.5.3 SYSTEM SETUP

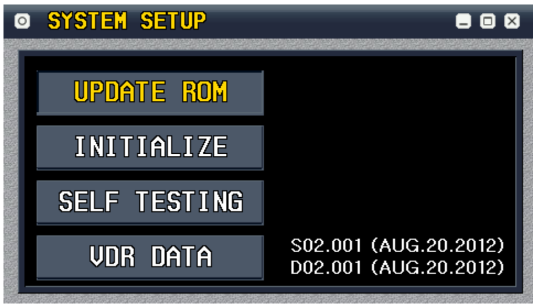
On this menu, you may check the VDR data, initialize the system, self testing and the software update.



● Software Update (UPDATE ROM)

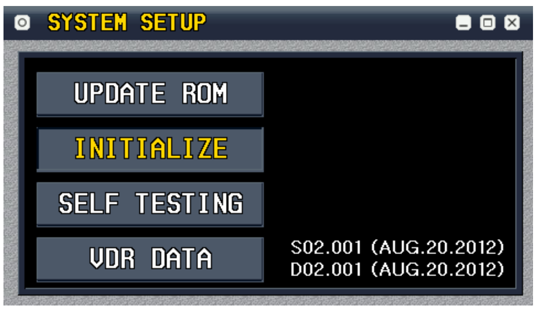
This function is used when updating the display unit version.

S02.001 (AUG.10.2012) and **D02.001 (AUG.10.2012)** shown on the right side means the version of the each processor unit (BNW-51) and display unit (BNW-50).

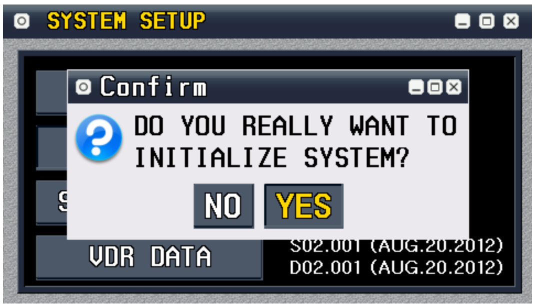


● Initialize

When you wish to initialize the setting, move the cursor to "Initialize" then press ↵, then you will be asked if you wish to initialize. Move to “YES” then press ↵. This will initialize the system and you will be brought to the setup password screen (as shown on the picture below).



<u>You must be aware that by using this function, all the settings will initialize</u>.



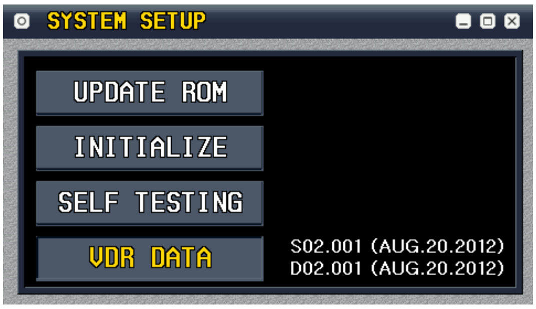


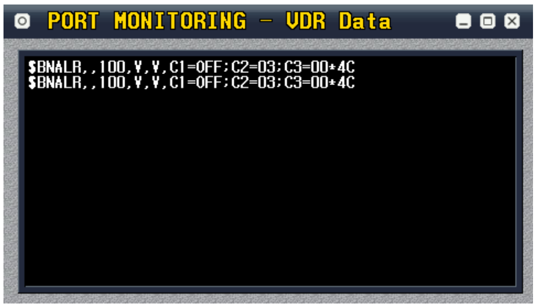
- **Self Testing**

- Refer to 4.4.2 SYSTEM SETUP (page 19)

- **Check the VDR DATA**

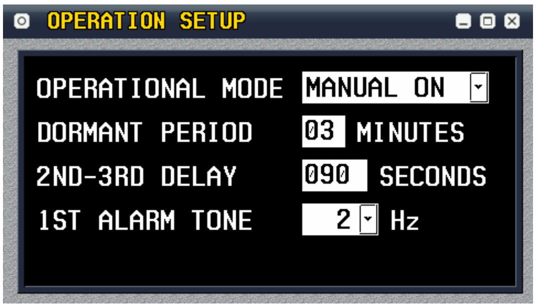
When used this function, you will be available the Real-time monitoring of VDR data.





4.6 OPERATIONAL DESCRIPTION

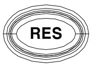
As shown on the right, "**Operational Mode = Manual ON, Dormant period = 3 minutes, the delay between the 2nd & 3rd stage alarm=90seconds**", the operation screen of the display unit (BNW-51) will be explained with these settings. Refer to 2.2 Operational sequence of alarms to help you to understand further.



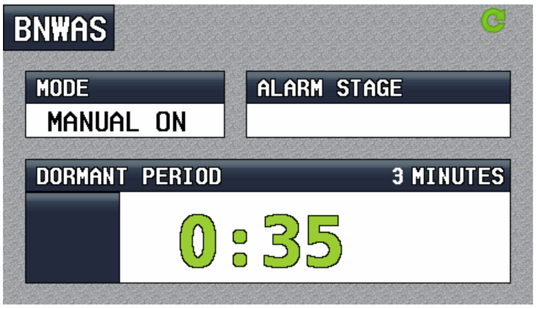
4.6.1 DORMANT PERIOD

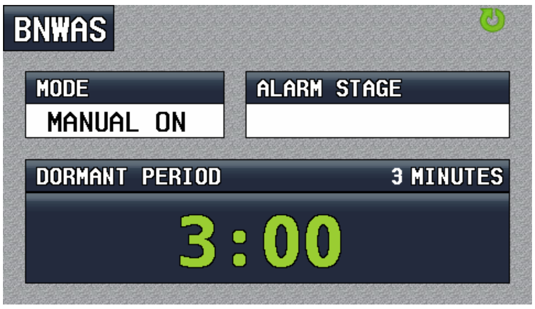
Alarm will not be initiated for the dormant period 3 minutes and time will decrease. If watch officer reset the timer within 3 minutes, then timer will restart.

The reset of the timer can be done in 3 different ways.

- Manual way of pressing " 

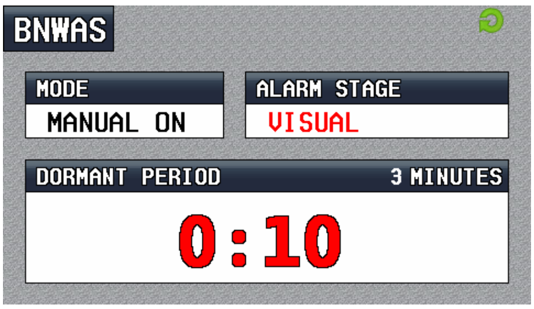
BUTTON" from the display unit (BNW-50).
- Manual way of using the "**RESET BUTTON**" on the reset unit (BNW-52/52W).
- Automatic way of using "**MOTION SENSOR**" which detects the movement on the bridge floor.

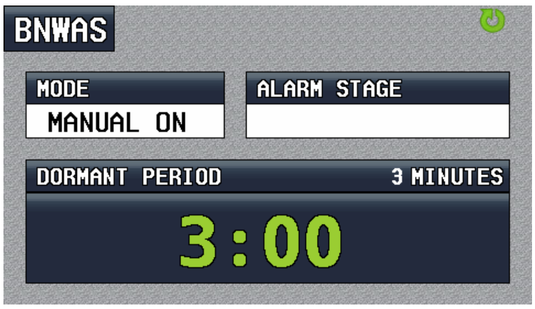




4.6.2 VISUAL INDICATION

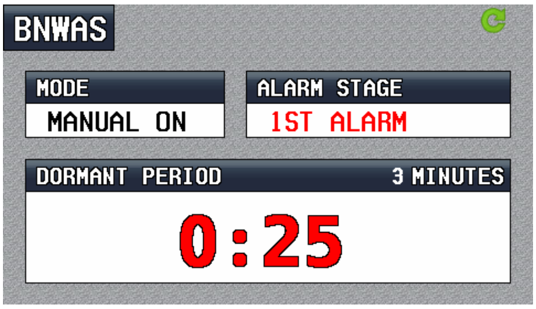
If not "RESET" during this dormant period (3~12 minutes), visual indication will be initiated for the next 15 seconds. ALARM STAGE on screen, "VISUAL" will be displayed and the elapsed time "0:10" will be shown in Red (flashing). If timer has been reset within 15 seconds after the visual Indication initiate, then the dormant period timer will restart from 3 minutes.

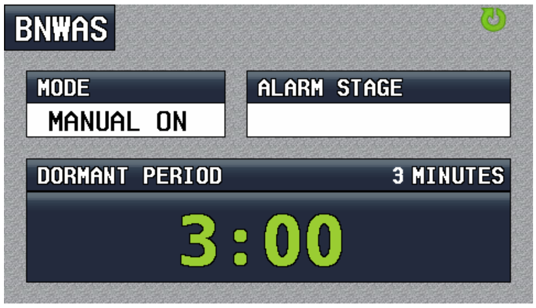




4.6.3 1ST STAGE BRIDGE AUDIBLE ALARM

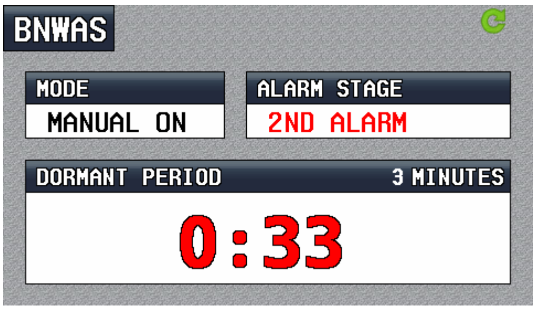
If not "RESET", the BNW-50 will additionally sound a 1st stage bridge audible alarm on the bridge 15 seconds after the visual indication is initiated. ALARM STAGE on screen, "1ST ALARM" will be displayed and the elapsed time "0:25" will be shown in Red (flashing). At this status, visual indication and 1st stage bridge audible alarm are initiated at the same time. If reset is inputted within 15 seconds after the 1st stage bridge audible alarm is initiated, then the visual indication and 1st stage bridge audible alarm are deactivated and the dormant period timer will restart from 3 minutes.

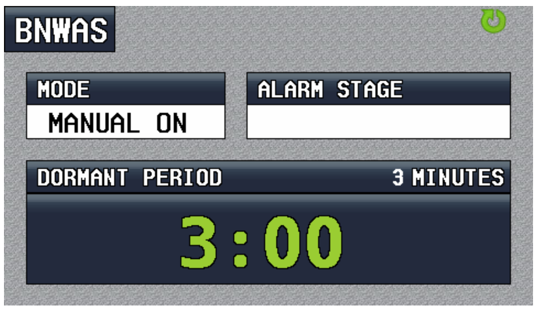




4.6.4 2ND STAGE REMOTE AUDIBLE ALARM

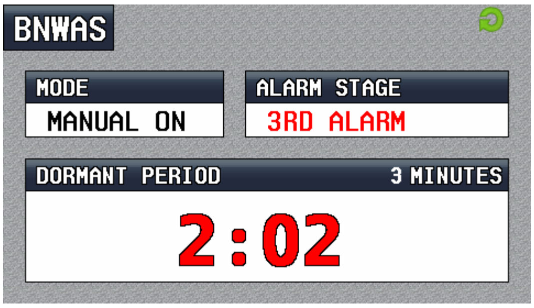
If not "RESET", the BNW-50 will additionally sound a 2nd stage remote audible alarm in the back-up officer's and/or Master's location 15 seconds after the 1st stage bridge audible alarm is initiated. ALARM STAGE on screen, "2ND ALARM" will be displayed and the elapsed time "0:33" will be shown in Red (flashing). At this status, visual indication, 1st stage bridge audible alarm and 2nd stage remote audible alarm are initiated at the same time. If timer has been reset within the period set between 2nd stage and 3rd stage audible alarm (90 seconds), then the visual indication, 1st stage bridge audible alarm and 2nd stage remote audible alarm are deactivated and the dormant period timer will restart from 3 minutes.

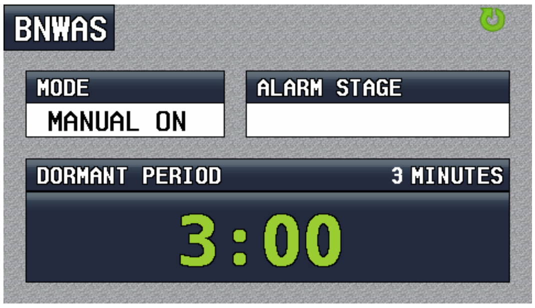




4.6.5 3RD STAGE REMOTE AUDIBLE ALARM

If not "RESET", the BNW-50 will additionally sound a 3rd stage remote audible alarm at the locations of further crew members capable of taking corrective actions 90 seconds after the 2nd stage remote audible alarm is initiated. ALARM STAGE on screen, "3RD ALARM" will be displayed and the elapsed time "2:02" will be shown in Red (flashing). On this status, all the alarms connected to the BNW-50 are initiated at the same time. If timer has been reset after this, all the alarms are deactivated and the dormant period timer restarts from 3 minutes.



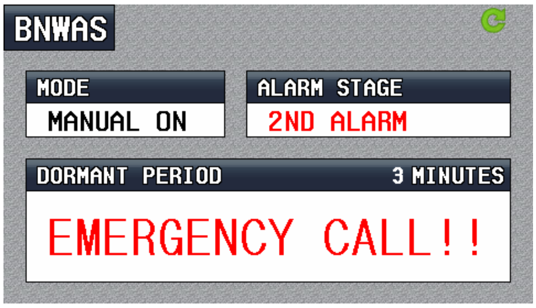


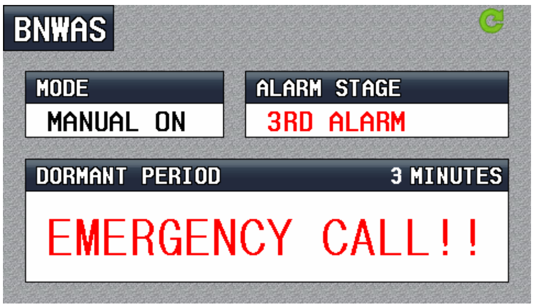
4.6.6 EMERGENCY CALL

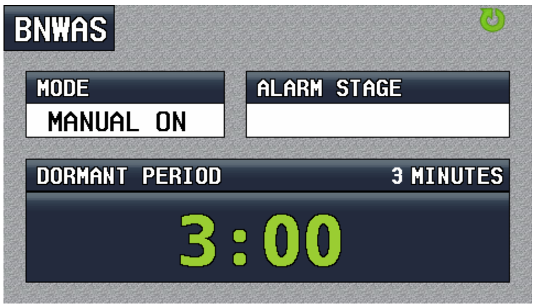
BNW-50 has built-in emergency call function. If the 

button of display unit (BNW-50) is pressed down, 2nd stage remote audible alarm is immediately initiated, and if no action is taken then 3rd stage remote audible alarm will initiate. On the screen, “2ND ALARM” will be displayed under ALARM STAGE and soon “3RD ALARM” will be shown. “2ND, 3RD ALARM” and the “EMERGENCY CALL!!” will be shown in Red (flashing).

<ins>**If the button is pressed down again, the emergency call will be deactivated.**</ins> After the emergency call function has been deactivated, and then it will go back to the previous set up status and restart the timer from 3 minutes.



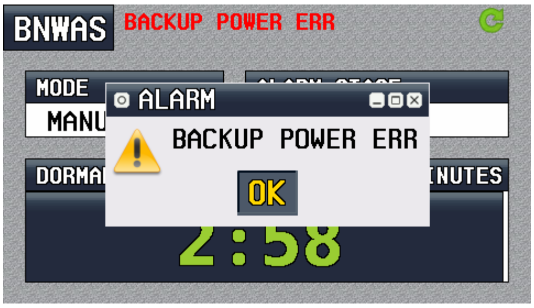


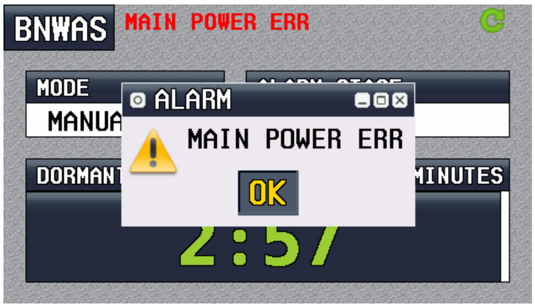


4.6.7 MALFUNCTION INDICATION

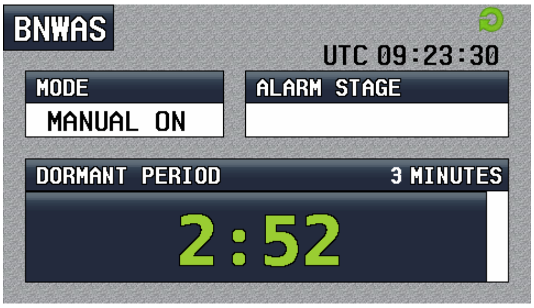
BNW-50 provides indication to the following malfunction. If the malfunction is activated, the display unit will sound the audible alarm and be indicated the error message. The malfunction source will be shown in Red (flashing) on the top of the screen.

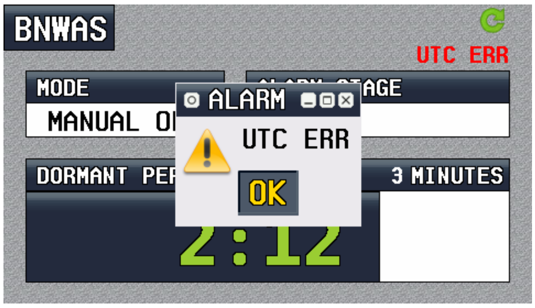
- If the main power (110/220V AC) or back-up power (24V DC) is not supplied, "**MAIN POWER ERR**" or "**BACK UP POWER ERR**" will be indicated on the screen.





- If the digital equipment which can output the GPS data gets connected, there will be shown the UTC time on the screen. When the inputting data is discontinued or disconnected, "**UTC ERR**" will be indicated on the screen.



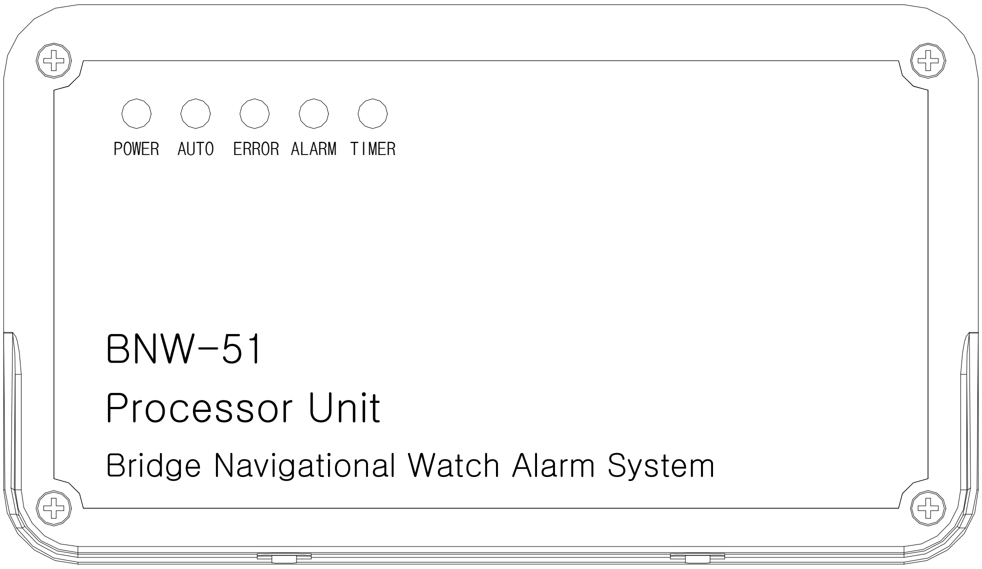


- When the communication of between the display unit and processor unit are disconnected, "**DISCONNECT ERR**" will be indicated on the screen.



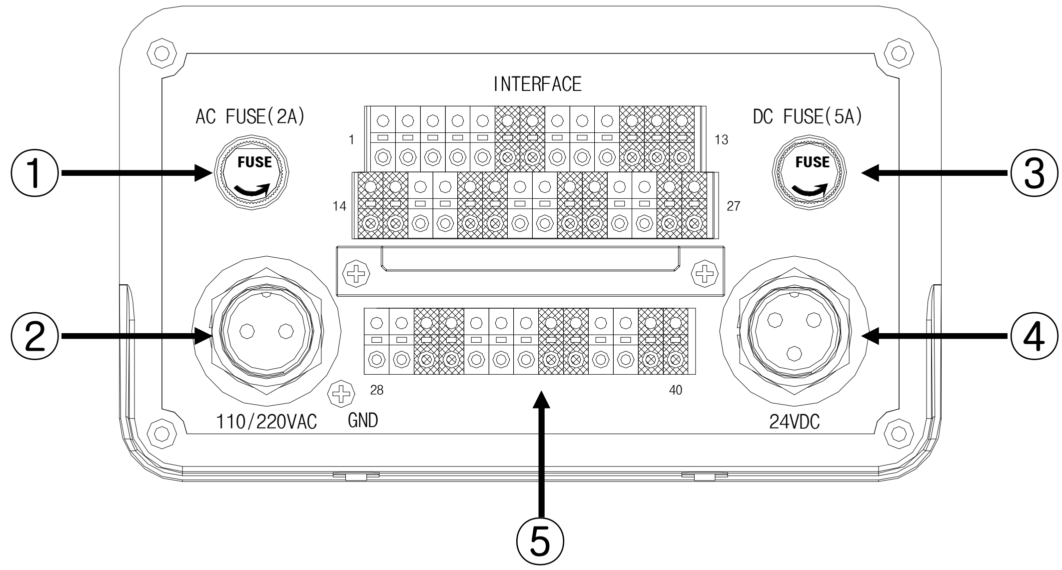
CHAPTER 5 BNW-51 (PROCESSOR UNIT)

5.1 LED FUNCTION (FRONT)



Name	Function	Color
POWER	LED lights up when power is connected	Red LED
AUTO	LED lights up when AUTO is selected from the Operational mode	Green LED
ERROR	LED lights up when the main or the back-up power is not supplied.	Red LED
ALARM	LED is lights up or flashing when BNW-50 system alarm is activated.	Red LED
TIMER	LED is flashing when the BNW-50 system reset counter is activated.	Brown LED

5.2 POWER AND INTERFACE (BACK)



1) AC Fuse (2A) : 2A is used as the main power fuse (AC)

2) AC POWER : Main Power (110/220V AC)

3) DC Fuse (5A) : 5A is used as the Back-up power fuse (DC)

4) DC POWER : Back up power (24V DC)

※ When it is released from the manufacturer, it is set at AC 220V, however you must change setting of the Process Unit (BNW-51) if you are using AC 110V.

5) INTERFACE TERMINAL

DISPLAY IN/OUT					RES2 LOW		RES1 LOW			ALARM VIS+AUD		
1	2	3	4	5	6	7	8	9	10	11	12	13
SLD	RXD	TXD	24V	GND	12V	RES	12V	RES	GND	VIS	AUD	GND

ALARM A		ALARM B		ALARM C		ALARM D		ALARM E		ALARM F		ALARM G	
14	15	16	17	18	19	20	21	22	23	24	25	26	27
24V	GND	24V	GND	24V	GND	24V	GND	24V	GND	24V	GND	24V	GND

ALARM FAIL		REMOT TRAK		NMEA TXD			NMEA RXD		RES3 PULS		EMERG EXT	
28	29	30	31	32	33	34	35	36	37	38	39	40
OUT+	OUT-	INP+	INP-	TXD+	TXD-	SLD	RXD+	RXD-	INP+	INP-	INP+	INP-

- Output DC24V power supply and Input/ Output RS-232 communication for display unit (1~5 PIN)
- Output DC12V power supply for motion sensor, reset unit and reset Input (6~10 PIN)
- Output the alarm signal for reset and alarm unit (11~27 PIN)
- Output the alarm interface for equipment failure (28~29 PIN)
- Input interface of operating heading or track controller system (30~31 PIN)
- Output the RS-422 communication NMEA data for black box (VDR) (32~34 PIN)
- Input the RS-422 communication NMEA data (Reset, alarm, etc) (35~36 PIN)
- Input the interface for the external emergency call device (39~40 PIN)

CHAPTER 6 INSTALLATION

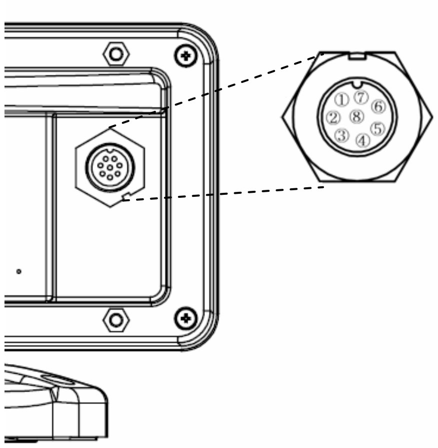
6.1 POWER SUPPLY

You should connect the Processor unit(BNW-51) to the Main power supply(AC 220V) using the AC cable, and DC cable should be connected to the vessel's battery(DC24V) which can produce power to the BNWAS for more than 6 hours.

※ When it is released from the manufacturer, it is set at AC 220V, however you must change setting of the Process Unit (BNW-51) if you are using AC 110V.

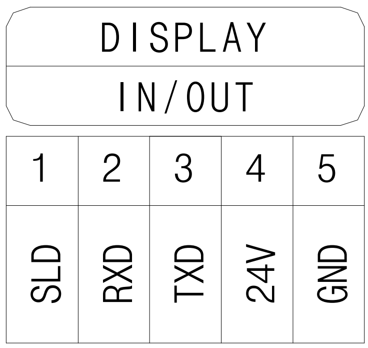
6.2 DISPLAY

You may choose an installation method between bracket mounting and the flush mounting for the display unit (BNW-50). Connect the display unit (BNW-50) with the processor unit (BNW-51) with cable (Z8-2M-05A) provided.



BNW-50

Power connector



BNW-51

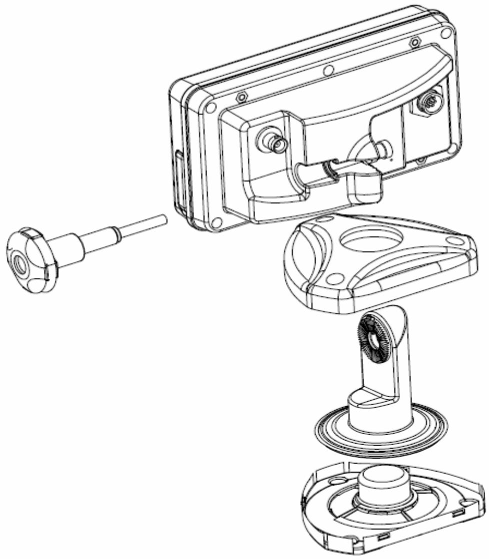
Interface terminal

Display unit (BNW-50)		Processor unit (BNW-51)	
Pin number	**Color of the cable (Z8-2M-05)**	**Interface terminal number**	**Function**
1	Black (GND)	**5(GND)**	GND
2	Not in use	**-**	-
3	White(RS-232 Output)	**2(RXD)**	RS-232 Input
4	Green(RS-232 Input)	**3(TXD)**	RS-232 Output
5	Red(DC24 Input)	**4(24V)**	DC24 Output
6,7,8	Not in use	**-**	-
X (N/C)	Black (Shield)	**1(SLD)**	Shield

6.2.1 BRACKET MOUNTING

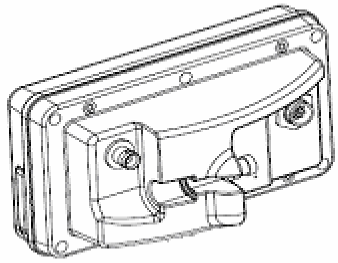
Before installing, consider the display unit's weight and search for the most convenient place for you.

- Installing the display
  1) Hold the display and find the joint between the bracket and the display.
  2) Push the display gently into the bracket.
  3) Turn the knob to lock.
- Detaching the display
  1) Turn the unit off.
  2) Loosen the knob and dismantle the end of the bracket.



6.2.2 FLUSH MOUNTING

1) Find the place to install the flush mounting.
2) Make a hole on the place you wish to install.
3) By using a saw, cut the panel
4) Make 4 holes for the screws
5) Install the screw on the display unit and put screws into the holes.
6) Attach the supplied hardware to the place you wish to install display unit.



※ **Before you begin, make sure you have enough space to install the display unit.**

6.3 RESET DEVICES (RES1/LOW, ALARM/VIS+AUD)

Connect the reset unit (BNW-52/52W) to the interface terminal (RES1/LOW, ALARM/VIS+AUD) of BNW-51. This reset unit combines the reset function and the visual alarm, the 1st stage audible alarm together. Therefore there is no need to install them separately.

The dimming of the visual indication can be controlled automatically, and the potentiometer (VR2:DIM) from internal PCB may also additionally adjust the dimming. Also, the visual indication can be stopped by the internal PCB's jump pin (CN4: Lamp OFF)

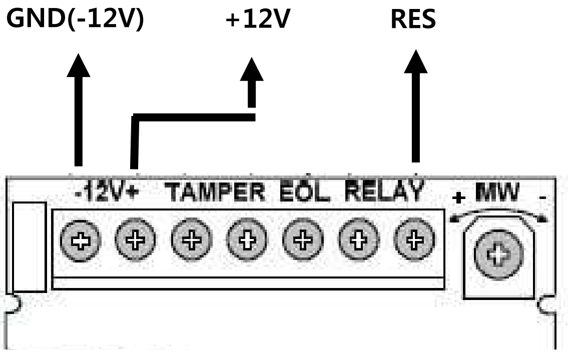
The volume of the alarm is controlled by the reset unit's PCB Potentiometer (VR1: Tone vol). The alarm tone is adjustable by moving the jump pin (CN5, CN6, CN7: tone) within PCB, and the 1st stage bridge

audible alarm period can be changed from the setup menu. By using the jump pin (CN3: Tone OFF) from internal PCB, the 1st stage bridge audible alarm can be stopped.

Also you have installation options depending on the place you wish to install the reset unit. (Flush type, desk type, watertight type). (Refer to CHAPTER 13 DIAGRAMS)

6.4 MOTION SENSOR (RES1/LOW)

Install the dual motion sensor (DND-300M) which consists of microwave and PIR detection. Connect the 2 power supply wires (+12V, -12V) of the motion sensor to [+12V] and [GND] of the processor unit interface terminal (RES1/LOW), and connect right one of the relay wires to the [RES] terminal as shown below. When installing the motion sensor, use the standard bracket. (Refer to CHAPTER 8. MOTION SENSOR)



In addition, few things need to be taken into account when deciding where to install.

- Microwave radiation can pass through the glass and nonmetallic walls, you must adjust the microwave's range so that it does not exceed the room limits. Otherwise the motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip.
- Large reflective objects (especially metals) within the range may distort the patterns of the detective range.
- If two motion sensors are installed in the same room or on the opposite sides of a shared wall, the sensors should not face each other and there must be at least 2 m distance between them.

6.5 ADDITIONAL RESET TERMINAL (RES2/LOW)

You can connect additional the reset units or the motion sensors to this unit. By setting the display unit, if ALARM UNIT A&B of the interface terminals of processor unit(BNW-51) are used as the visual indication (VIS) and 1st stage bridge audible alarm (AUD), this can be configured to the same as the standard reset unit. (Refer to 13.3 INSTALLATION DIAGRAM Example-2)

6.6 2ND & 3RD STAGE REMOTE AUDIBLE ALARM (ALARM/A~G)

Install the alarm unit (BNW-52) in the officer's room or the captain's room when there is only one backup officer. When there is more than 1 backup officer, then install the alarm unit (BNW-53) in every officer's rooms separately. Alarm unit (BNW-53) gives you installation options (flush mounting or desk type) depending on where you are installing the unit.

Also all the alarm units' (BNW-53) alarm tone can be changed by moving the internal PCB's jump pin (CN2, 4: Tone-H / CN3, 5: Tone-L), volume of the alarm can be controlled by the internal PCB's potentiometer (VR1: Tone vol)

➢ **Backup officer's decision**

After connecting the alarm unit to ALARM UNIT A ~ G with ignored the stage of audible alarm, you can reassign the stage of the connected alarm unit from the display unit. (Refer to 4.5.2 SETUP ALARM UNITS)

Preset value when manufactured (2nd stage remote audible alarm can be selected separately.)
ALARM UNIT A : 2nd stage remote audible alarm – officer's cabin 1
ALARM UNIT B : 2nd stage remote audible alarm – officer's cabin 2
ALARM UNIT C : 2nd stage remote audible alarm – officer's cabin 3
ALARM UNIT D : 2nd stage remote audible alarm – officer's cabin 4
ALARM UNIT E : 3rd stage remote audible alarm – crew's quarters
ALARM UNIT F : 3rd stage remote audible alarm – crew's quarters
ALARM UNIT G : 3rd stage remote audible alarm – crew's quarters

For example, you may adjust the setting as below.
ALARM UNIT A : Visual indication (The additional visual indication)
ALARM UNIT B : 1st stage bridge audible alarm (The additional 1st stage bridge audible alarm)
ALARM UNIT C : 2nd stage remote audible alarm – officer's cabin 1
ALARM UNIT D : 2nd stage remote audible alarm – officer's cabin 2
ALARM UNIT E : 2nd stage remote audible alarm – officer's cabin 3
ALARM UNIT F : 3rd stage remote audible alarm – crew's quarters
ALARM UNIT G : 3rd stage remote audible alarm – crew's quarters

➢ If you install the audible alarm to ALARM UNIT A ~ G separately as above, you may selectively turn ON/OFF the alarm for each cabin, however this will create many wires.

➢ You can minimize the wires by tying them (distinguish between officer's cabin and the crew's quarters) if you do not have to turn ON/OFF the alarm per cabin.

6.7 EXTERNAL FAILURE ALARM OUTPUT (ALARM/FAIL)

Connect the failure alarm output to the external alarm. These two terminals are usually connected however when the main power (110/220V AC) or back-up power (24V DC) is not supplied they will disconnect.

6.8 INPUT FOR REMOTE ACTIVATION (REMOT/TRAK)

Connect the ship's heading or track control system to the remote activation input terminals. Under the AUTOMATIC mode, the two terminals (INP+ / INP-) should be in contact for BNWAS system to activate.

6.9 NMEA OUTPUT (NMEA/TXD)

Connect this terminal send the alarm data according to the ALR sentence of IEC 61162-1 to the equipment that requires BNWAS' NMEA alarm data (the VDR, etc). The alarm data shall be sent with any change of the BNWAS settings for mode or dormant period, and with any activated and reset alarm. For further information on the alarm data, refer to the chapter 11 NMEA sentence (IEC 61162-1).

➢ **ALARM DATA**

$--ALR,hhmmss.ss,xxx,A,A,c--c*hh<CR><LF>

- hhmmss.ss : This will be left blank if BNWAS does not include the UTC time information.
- xxx : Alert or the name of the reset order, Auto mode will appear as "000".
- A : A = Exceeded dormant period time, V = Not exceeded dormant period time.
- A : A = Alert response, V = No alert response
- c—c : BNWAS Mode (Refer to IEC 62616 3.1.1): c1; c2; c3
  c1 = AUT or MAN or OFF
  c2 = Dormant period time by minutes, (03 -12)
  c3 = Alert stage: 1, 2 or 3. (Blank = no alert)

Example : $BNALR,,000,A,V,C1=AUT;C2=03;C3=1*hh<CR><LF>

No.	SOURCE OF ALARM OR RESET COMMAND
001	Display Unit (BNW-50)
002	Reset Unit (BNW-52/52W)
003	Motion Sensor (DND-300M)
004	-
005	External Emergency Call Device
006	The Reset or Alarm Data (NMEA)

6.10 NMEA INPUT (NMEA/RXD)

You can connect the digital equipment which can output the NMEA data (reset, alert etc). Also, when digital equipment which can output the GPS data gets connected, there will be time shown on the display. For further information on the input NMEA data, refer to the CHAPTER 11 NMEA SENTENCE (IEC 61162-1).

➢ **RESET DATA**

BNW-50 will reset if you enter the EVE sentence to this terminal as follow.

$--**EVE**,hhmmss.ss,**BNWAS**,**Operator activity*** hh<CR><LF>

➢ **ALARM DATA**

BNW-50 will be activated or deactivated the emergency call if you enter the ALR sentence to this terminal as follow.

Activated : $--**ALR**,hhmmss.ss,xxx,A,A,c--c,**EMERGENCY CALL**,**ON***hh<CR><LF>

Deactivated : $--**ALR**,hhmmss.ss,xxx,A,A,c--c,**EMERGENCY CALL**,**OFF***hh<CR><LF>

➢ **GPS DATA**

The UTC time is indicated on screen of the display unit (BNW-50) if you enter UTC time data of the **GGA**, **GLL**, **RMC**, **ZDA** sentence to this terminal.

6.11 EXTERNAL EMERGENCY CALL DEVICE (EMERG/EXT)

It is possible to connect the alarm contact signal coming from the outside with this terminal. Connect the two contacts of the external emergency call device to this terminal. When these two terminals (INP+/INP-) become in contact, system's emergency call function activates. If the external emergency call's terminals become in contact again, it will be deactivated.

CHAPTER 7 INSTALLATION CONSIDERATION

7.1 GENERAL

The following requirements are included in IMO resolution MSC.128(75) concerning the installation of the BNWAS.

7.2 LOCATION OF RESET FUNCTION (128/A4.1.3.1)

It shall not be possible to initiate the reset function or cancel any audible alarm from any device, equipment or system not physically located in areas of the bridge providing proper look out.

7.3 RESET FACILITIES (128/A5.1.4)

Means of activating the reset function shall only be available in positions on the bridge giving proper look out and preferably adjacent to visual indications. Means of activating the reset function shall be easily accessible from the conning position, the workstation for navigating and manoeuvring, the workstation for monitoring and the bridge wings.

7.4 VISUAL INDICATIONS (128/A5.2.2 PART)

Flashing indications shall be visible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed.

7.5 1ST STAGE BRIDGE AUDIBLE ALARM (128/A5.2.3 PART)

This alarm shall be audible from all operational positions on the bridge where the OOW may reasonably be expected to be stationed. The bridge includes wheelhouse and bridge wings.

CHAPTER 8 MOTION SENSOR

8.1 OPERATING MOTION SENSOR

We have adapted Doppler radar principle so the sensor can detect the microwave (MW) and infrared rays (PIR) at the same time. It can be used under extreme environment caused by heat, temperature, noise, humidity, airflow and dust. (Be aware when using this since electromagnetic wave can go through the glass or plaster board)

The sensor's detective distance is 5m, and it is small and practical sensor used for internal security. Sensor can detect the movement made from inside by 90°, and is not harmful to human. By using the bracket attached to the sensor, you may install it easily on the wall or the ceiling.



Input voltage	: 12 VDC (±3V)
Power consumption	: Operating= 26mA, Standby= 17mA
Detective range	: 5m
Pre heating time	: 1minute
Alarm period	: 2 seconds (±1second)
Detective angle	: 90°
Installation height	: 2~4m
Method of detection	: Quad-element PIR and microwave pulse Doppler
Detection outcome	: For 2 seconds, with green LED blinking, RELAY output accesses to GND. (CLOSE)

LED indication : Brown, green LED blink = Power is connected and warms up (1 min max.)

Brown LED blink	= MW sensor has detected movement.
Green LED blink	= PIR sensor has detected movement.
Red LED blink	= RELAY is under operation for external alarm

8.2 INSTALLING MOTION SENSOR

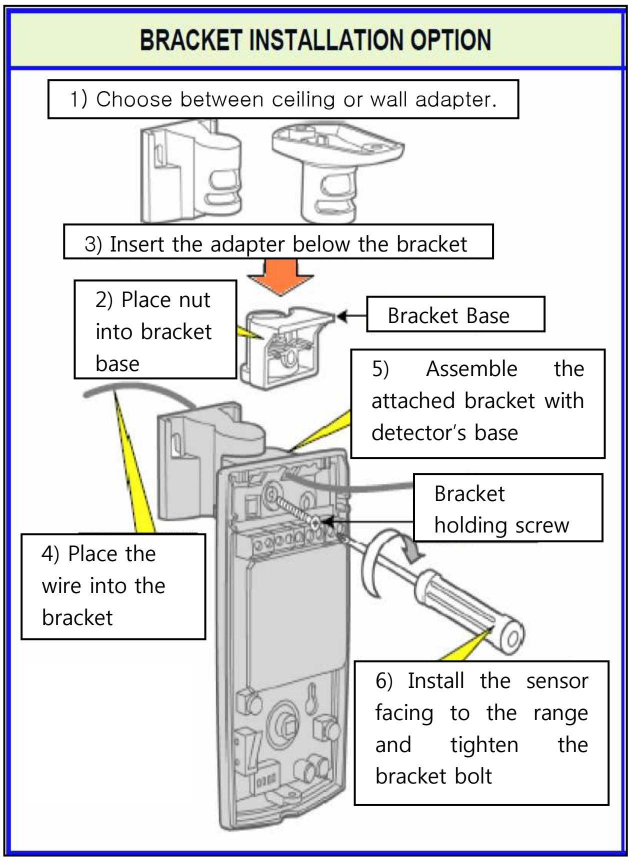
Microwave radiation can pass through the glass and nonmetallic walls, you must adjust the microwave's range so that it does not exceed the room limits. Otherwise the motion in the next room or moving traffic along the outer side of the wall will cause the MW detector to trip. Large reflective objects (especially metals) within the range may distort the patterns of the detective range. If two motion sensors are installed in the same room or on the opposite sides of a shared wall, the sensors should not face each other and there must be at least 2 m distance between them.

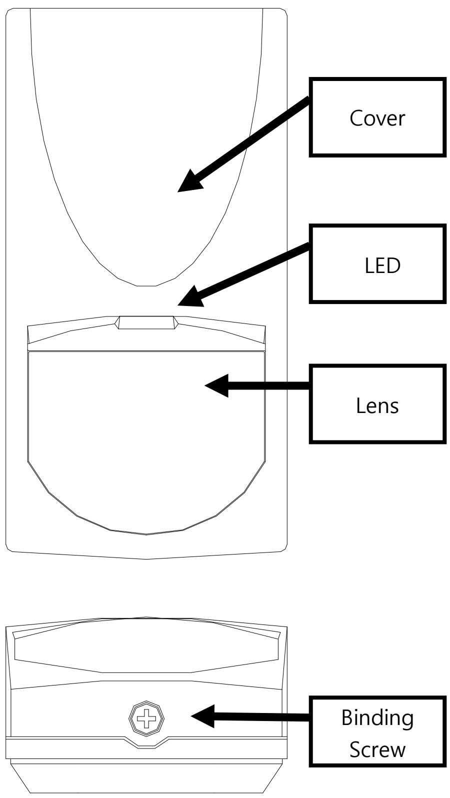
● **Installment place**

1) Avoid installing from direct sunlight
2) Install it separately from the vessel's power cable
3) Do not install it at the back of the partition
4) Avoid installing near the heat
5) Install it on the stable and hard surface
6) Avoid installing from windy environment
7) Do not install it outside.

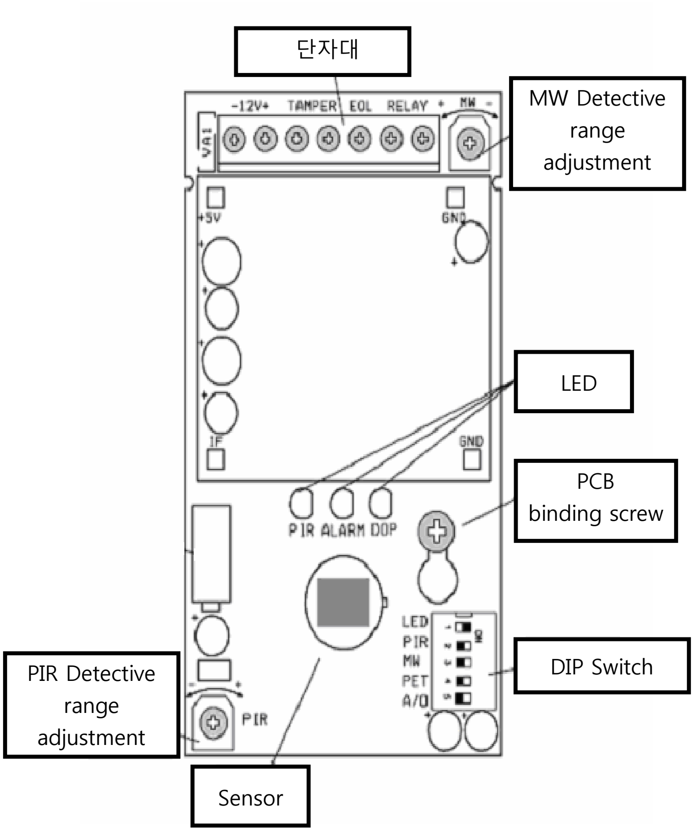
● **Installation instruction**

1) Remove the front cover by loosening the screw at the bottom of the sensor.
2) Loosen the binding screw of PCB and carefully remove the PCB.
3) Drill the bracket holding screw and wire hole.
4) Refer to the picture beside.
5) Pull the wire through the holes and by using the binding screw, fix the bracket and sensor together.
6) Assemble the PCB carefully.
7) Connect the wire with the right terminal and screw. (Refer to 6.4 motion sensor)
8) Assemble the front cover.
9) Fix the sensor adapter on the wall.





Motion sensor Exterior



PCB Plan

- **Check the operation after the installment**

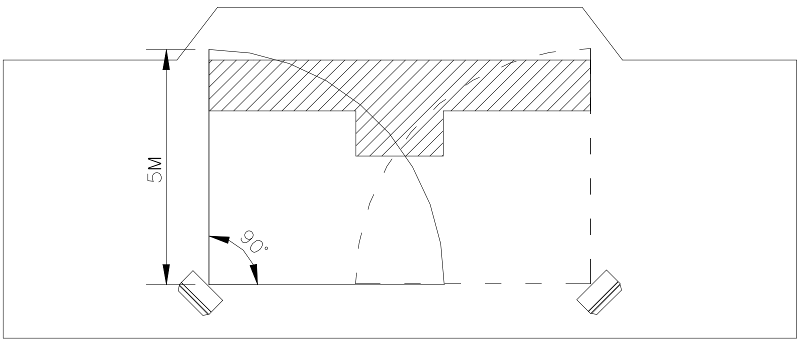
Move around in the detective range after installation and check if the Green lamp (PIR), Brown lamp (MW), Red lamp (RELAY) turns on and off. If it turns on and off whenever you move around it, this is normal. If the Green lamp and Brown lamp are constantly flickering after the pre-heating time of the lamp, check if there is any shielding around it. If it is malfunctioning, reinstall the equipment.

- **Detailed adjustment (Should be done by professional technician if required)**

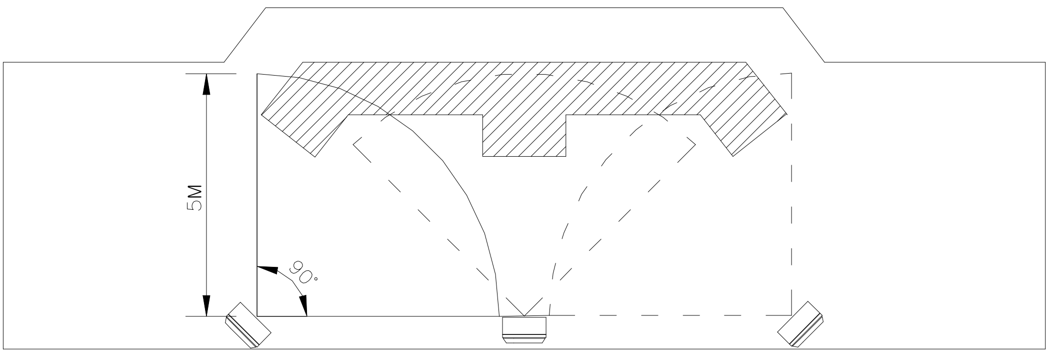
1) Range Control: Use the Potentiometer marked "PIR" to adjust the detection sensitivity between 15% and 100%, according to walk test in the protected area. (Factory setting is 57%) Rotate the potentiometer clockwise to increase range, counter-clockwise to decrease range.

2) Sensitivity Control: Position the potentiometer "MW" at min-scale firstly, then, along with walk testing, turn to mid-scale or max-scale gradually until you get detection at the longest distance for the required detection range. Rotate the potentiometer clockwise to increase range (+), counter-clockwise to decrease range (-).

- **Installing Motion Sensor in the bridge**



Installation example-1 (Motion Sensor x 2EA)



Installation example-1 (Motion Sensor x 3EA)

CHAPTER 9 TEST AFTER INSTALLATION

Go through the check list below after the installing the equipment.

No.	Check list	OK
1	Turn on the BNW-50, set the dormant period on 3 minutes and the operational mode in manual on.	
2	Go to the reset device (BNW-52/52W, motion sensor), then do not move for 3 minutes. After 3 minutes, check if Reset unit (BNW-52/52W) has lighted up (flashing) then check if lighting stops when you move near to the motion sensor or press the reset button.	
3	Do not move for 3 minutes. See if reset unit lights up (flashing), then check if reset unit (BNW-52/52W) activates the 1st stage bridge audible alarm after 15 seconds from then.	
4	Go to the captain/master and/or the back-up officer's cabin to check if the alarm unit (BNW-53) activates the 2nd stage remote audible alarm after 15 seconds from the 1st stage bridge audible alarm.	
5	Go to the crew's office and check if the 3rd stage remote audible alarm activates after 90~180 seconds (adjustable) from the 2nd stage remote audible alarm.	
6	Go to the bridge and reset all the alarms by pressing the reset button.	
7	Press the emergency call button on display unit (BNW-50). Check if the 3rd stage remote audible alarm is activated after the 2nd stage remote audible alarm is immediately initiated. Deactivates the alarm by pressing the emergency call button.	
8	Remove the main power cable. Check if you see the Main Power Failure alarm on the display. Connect the main power cable again.	
9	Remove the backup power cable. Check if you see the Back Up Power Failure alarm on the display..	
10	If failure relay output is used, check if the equipment connected to the failure relay works properly. Then connect the backup power cable.	
11	If VDR (black box) is used, check if the VDR receives data information from the Processor unit (BNW-51).	
12	If vessel's heading or the track control system is connected, set the BNW-50's alarm mode as AUTOMATIC. Check if the dormant period timer operates when the vessel's heading or track control system is operating.	

CHAPTER 10 MAINTENANCE AND FAULT DIAGNOSIS

10.1 SYSTEM MAINTENANCE

Constant maintenance is required to maintain the functionality of the equipment. Maintenance means regular inspection on the equipment, software upgrade etc and table below should help you to maintain your equipment.

ITEM	CONTENT
Connector and the terminals	Check if the connectors and the terminals are connected properly.
Cable	Check the cables. If damaged or cut then you must change it immediately.
Ground terminal and ground wire	Check the ground terminal, if it is rusted or decomposed, you must change it or clean it. You must also check the connection of the ground wire.
Clean	Use clean tissue or the soft fiber to clean the salt precipitate or dirt. Do not use the chemical liquids as it may erase the letters or peel the writings on the equipment off.

10.2 FAULT DIAGNOSIS

General fault symptoms and the solutions are described in the table below. User should not dismantle the equipment when the solutions do not help. Unprofessional dismantle or fixing the equipment may lower the equipment's functionality and shorten its life. You should contact the professional technician.

A/S department ☏ : (82) 051-601-5570~5574

No.	Symptoms	Solutions
1	Motion sensor does not reset.	Check the terminal power of the interface terminal [RES1/LOW] of BNW-51 (pin number 9~ 10). When the motion sensor's lamp is red, power must be on LOW(0V) Double check the motion sensor's cable connection, when 5V does not convert into 0V.

2	BNW-50 does not turn on	Check the AC or DC fuse. Check the power of AC input (220V) and DC input (24V) Check the power cable's connection.
3	Reset function does not operate.	Check the terminal power of the interface terminal [RES1/LOW] of BNW-51. (It should be 0V only when reset button is pressed or movement was detected). Movement detect: Terminal should be 0V only when the red lamp is lighted. When power supply stays at 0V. 1) Set the BNW-50 as MANUAL OFF mode. 2) Install only 1 reset unit in the [RES1/LOW] terminal. 3) Set BNW-50 as MANUAL ON mode. 4) Check if the visual indication activates after 3 minutes 5) Press the reset button to check if the alarm resets. 6) Set BNW-50 as MANUAL OFF mode. 7) Install only 1 motion sensor in the [RES1/LOW] terminal. 8) Set BNW-50 as Manual ON mode and do not move. 9) Check if the visual indication activates after 3 minutes. 10) Check if the alarm resets when the movement is made around. 11) Install both reset unit and motion sensor and follow the steps above to check.
4	Visual indication, 1st stage ~ 3rd stage audible alarm are not operating, yet is shown as activated on the display.	Check the cable. Check the DC24V power supply on the [24V] terminal of the alarm unit (BNW-53)

CHAPTER 11 NMEA SENTENCE (IEC 61162-1)

BNW-50 provides the interface such as IEC 61162-1 ALR, EVE...etc with the message below.

SETTINGS : Bit(4800), Databit(8), Paritet(N), Stop bit(1), Flow(Hardware)

11.1 ALR – Set alarm state

Local alarm condition and status. This sentence is used to report an alarm condition on a device and its current state of acknowledgement.

```
$--ALR  ,hhmmss.ss  ,xxx  ,A  ,A  ,c--c   *hh<CR><LF>
            ①          ②    ③  ④    ⑤
```

① Time of alarm condition change, UTC

② Unique alarm number (identifier) at alarm source

③ Alarm condition (A = threshold exceeded, V = not exceeded)

④ Alarm's acknowledge state, A = acknowledged, V = unacknowledged

⑤ Alarm's description text

11.2 EVE – General event message

This sentence is used to transmit events (e.g. actions by the crew on the bridge) with a time stamp.

```
$--EVE  ,hhmmss.ss  ,c--c  ,c--c  *hh<CR><LF>
            ①          ②      ③
```

① Event time

② Tag code used for identification of source of event

③ Event description

11.3 GGA – Global positioning system (GPS) fix data

Time, position and fix-related data for a GPS receiver.

```
$--GGA  ,hhmmss.ss  ,llll.ll,a  ,yyyyy.yy,a  ,x  ,xx  ,x.x  ,x.x  ,M  ,x.x  ,M  ,x.x  ,xxxx  *hh<CR><LF>
            ①           ②            ③         ④   ⑤    ⑥    ⑦     ⑧    ⑨    ⑩    ⑪     ⑫
```

① UTC of position

② Latitude N/S

③ Longitude E/W

④ GPS quality indicator

⑤ Number of satellites in use

⑥ Horizontal dilution of precision

⑦ Antenna altitude above/below mean sea level (geoid)

⑧ Units of antenna altitude, m

⑨ Geoidal separation

⑩ Units of geoidal separation, m

⑪ Age of differential GPS data

⑫ Differential reference station ID

11.4 GLL – Geographic position

This sentence is a primary source of position information for the transponder when connected to a functional GNSS system. In the absence of GNS sentences, longitude and latitude information may also be obtained from GNS, GGA or RMC sentences.

$--GLL ,llll.ll,a ,yyyyy.yy,a ,hhmmss.ss ,A ,a *hh<CR><LF>

① ② ③ ④ ⑤

① Latitude, N/S ② Longitude, E/W

③ UTC of position ④ Status ('A' -> use mode flag; 'V' -> use position as default)

⑤ Mode indicator ('A', 'D', 'E', 'M' -> used; 'N' -> invalid)

11.5 RMC – recommended minimum specific GNSS data

This sentence is used to transmit the time, data, position, course, and speed data from a GNSS navigation receiver. The sentence is transmitted at least once every two seconds from GNSS device(s) and is always accompanied by an RMB sentence when a destination waypoint is active.

$--RMC ,hhmmss.ss ,A ,llll.ll,a ,yyyyy.yy,a ,x.x ,x.x ,xxxxxx ,x.x,a ,a *hh<CR><LF>

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① UTC of position fix

② Status ('A' -> use mode field; 'V' -> use fields as default values)

③ Latitude, N/S ④ Londitude, E/W

⑤ speed over ground ⑥ course over ground

⑦ date ⑧ magnetic variation

⑨ mode indicator ('A', 'D', 'E', 'M' -> used; 'N' -> invalid)

NOTE That RMC has priority over VTG.

11.6 ZDA – Time and date

UTC, day, month, year and local time zone

$--ZDA ,hhmmss.ss ,xx ,xx ,xxxx ,x.x ,x.x *hh<CR><LF>

① ② ③ ④ ⑤ ⑥

① UTC

② Day, 01 to 31 (UTC)

③ Month, 01 to 12 (UTC)

④ Year (UTC)

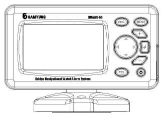
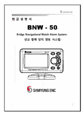
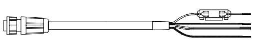
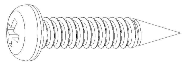
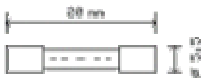
⑤ Local zone hours, 00 h to ±13 h

⑥ Local zone minutes, 00 to +59

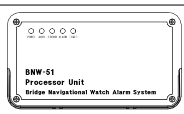
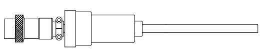
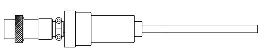
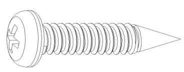
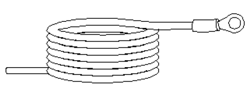
NOTE Local time zone is the magnitude of hours plus the magnitude of minutes added, with the sign of local zone hours, to local time to obtain UTC. Local zone is generally negative for East longitudes with local exceptions near the International Date Line.

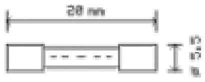
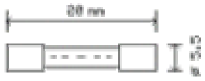
CHAPTER 12 PACKING LIST

12.1 BNW-50 (STANDARD)

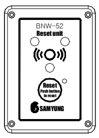
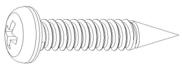
BNW-50(Display Unit Desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Display UNIT		BNW-50		1		Bracket protection cover
			CODE NO.	E01-8800-00			
2	Manual		BNW-50-MK		1		
			CODE NO.	M00-0481-01			
BNW-50-A(Display Unit Installation Accessory)							
3	Cable Ass'y		Z8-2M-05A		1	C-1	
			CODE NO.	574-0179-02			
4	Screw		Type 1 5X20 STS		3		
			CODE NO.	904-0050-00			
5	FUSE		2A/250V[30mmX6mm]		2		
			CODE NO.	527-2002-2Q			

12.2 BNW-51 (STANDARD)

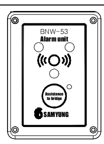
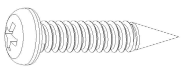
BNW-51(Processor Unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Processor UNIT		BNW-51		1		
			CODE NO.	E02-0800-00			
BNW-51-A(Processor Unit Installation Accessory)							
2	Cable Ass'y		SCN20/2-3M-02		1		AC power
			CODE NO.	574-0107-02			
3	Cable Ass'y		SCN3-3M-02		1		DC power
			CODE NO.	574-0390-01			
4	Screw		Type 1 4X16 STS		4		
			CODE NO.	904-0049-11			
5	Cable Ass'y		01-3M-D01 Cable Ass'y		1		Ground
			CODE NO.	574-0102-01			
6	Cable Tie		DACT100-2.5		10		
			CODE NO.	597-0050-1D			

7	FUSE		2A/250V[20mmX5mm]		2		AC POWER
			CODE NO.	527-2002-1Q			
8	FUSE		5A/250V[20mmX5mm]		2		DC Power
			CODE NO.	527-2005-1Q			

12.3 BNW-52 FLUSH TYPE (STANDARD)

BNW-52(Reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	RESET UNIT		BNW-52		1		
			CODE NO.	E02-1800-00			
BNW-52-A(Reset unit installation accessory)							
2	Screw		Stain piece type1 3X12 STS		4		
			CODE NO.	904-0237-01			

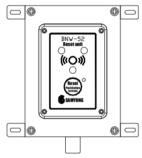
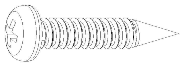
12.4 BNW-53 FLUSH TYPE (STANDARD)

BNW-53(Alarm unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	ALARM UNIT		BNW-53		1		
			CODE NO.	E02-2800-00			
BNW-53-A(Alarm unit installation accessory)							
2	Screw		Stain piece type1 3X12 STS		4		
			CODE NO.	904-0237-01			

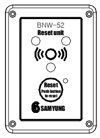
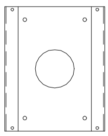
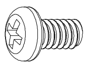
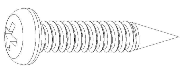
12.5 MONTION SENSOR (STANDARD)

MOTION SENSOR							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	MOTION SENSOR		DND-300M		1		Installation accessory included
			CODE NO.	557-9020-1D			

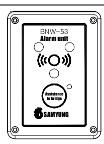
12.6 BNW-52W WATERTIGHT TYPE (STANDARD)

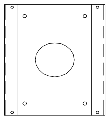
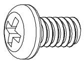
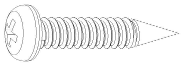
BNW-52W(Watertight reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	실외형 RESET UNIT		BNW-52W		1		
			CODE NO.	E02-8800-00			
BNW-52W-A(Watertight reset unit installation accessory)							
2	Screw		Type 1 5X20 STS		4		
			CODE NO.	904-0050-00			

12.7 BNW-52 DESK TYPE (OPTION)

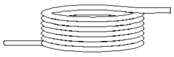
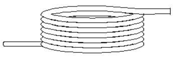
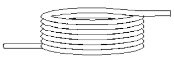
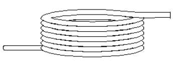
BNW-52(Reset unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	RESET UNIT		BNW-52		1		
			CODE NO.	E02-1800-00			
BNW-B(Desk type bracket)							
2	Bracket		BNW-B		1		
			CODE NO.	E02-1811-01			
BNW-B-A(Desk type bracket installation accessory)							
3	Bolt		M3X6 STS304		4		
			CODE NO.	900-0134-01			
4	Screw		Type 1 3X12 STS		4		
			CODE NO.	904-0037-11			

12.8 BNW-53 DESK TYPE (OPTION)

BNW-53(Alarm unit desktop)							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	ALARM UNIT		BNW-53		1		
			CODE NO.	E02-2800-00			

BNW-B(Desk type bracket)							
2	Bracket		BNW-B		1		
			CODE NO.	E02-1811-01			
BNW-B-A(Desk type bracket installation accessory)							
3	Bolt		M3X6 STS304		4		
			CODE NO.	900-0134-01			
4	Screw		TYPE 1 3X12 STS		4		
			CODE NO.	904-0037-11			

12.9 CABLE (OPTION)

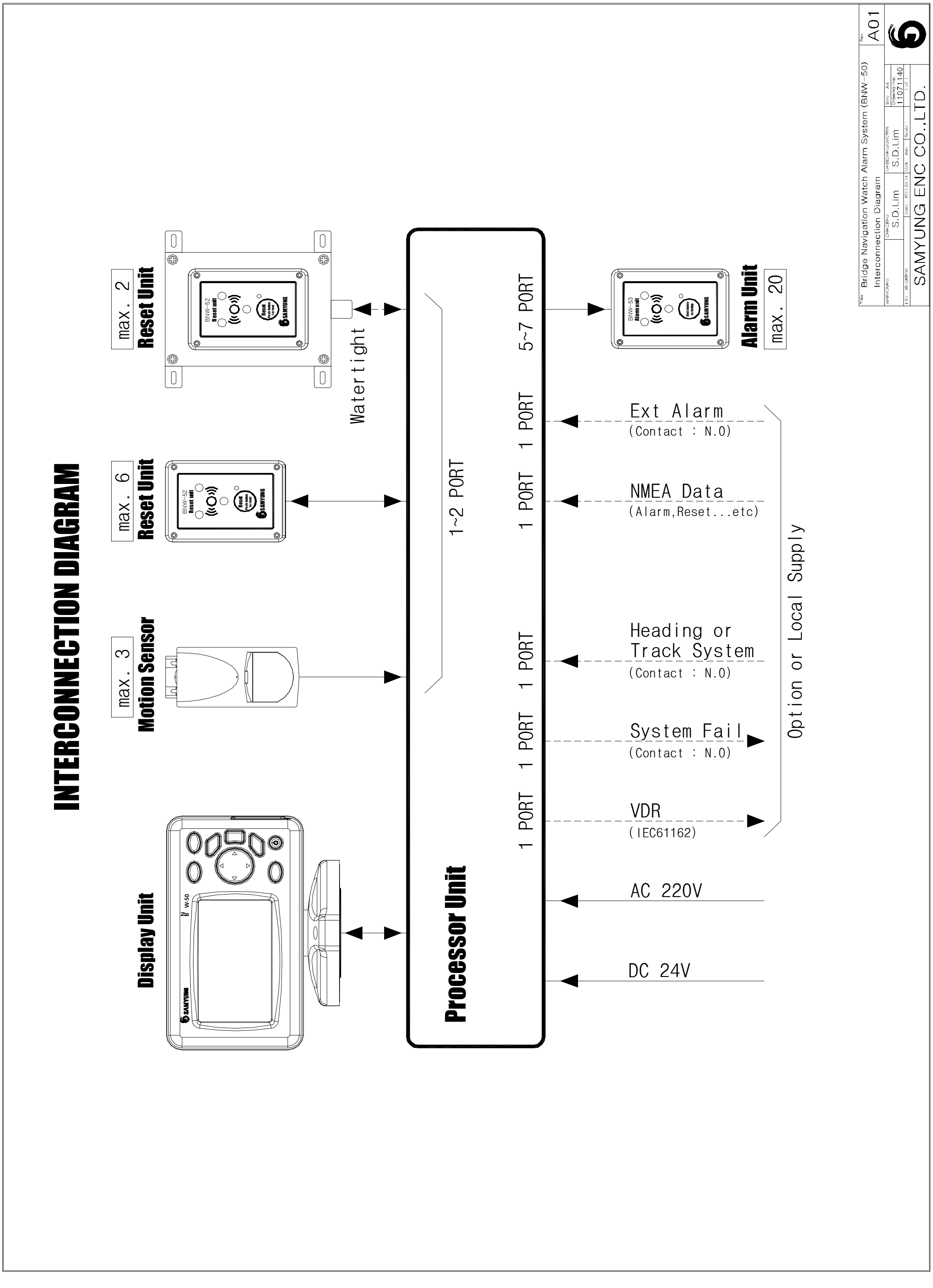
Reset unit and motion sensor installation cable							
NO.	Item	External Feature	STANDARD		Q'ty	CHK	Remark
1	Cable		UL 2464 6C X 24 AWG			C-2	LENGTH
			CODE NO.	567-2406-1K		C-4	OPTION
Watertight type Reset Unit installation cable							
2	Cable		UL 2464 2C X 20 AWG			C-3	LENGTH
			CODE NO.	576-2002-1K			OPTION
Alarm unit installation cable (SMALL)							
3	Screw		UL 2464 6C X 20 AWG			C-5	LENGTH
			CODE NO.	567-2006-1K			OPTION
Alarm unit installation cable(LARGE)							
4	Rubber		CVV-SB 1.25SQMM X 2C			C-6	LENGTH
			CODE NO.	570-1252-1K			OPTION

※ Recommendation when selecting the wire

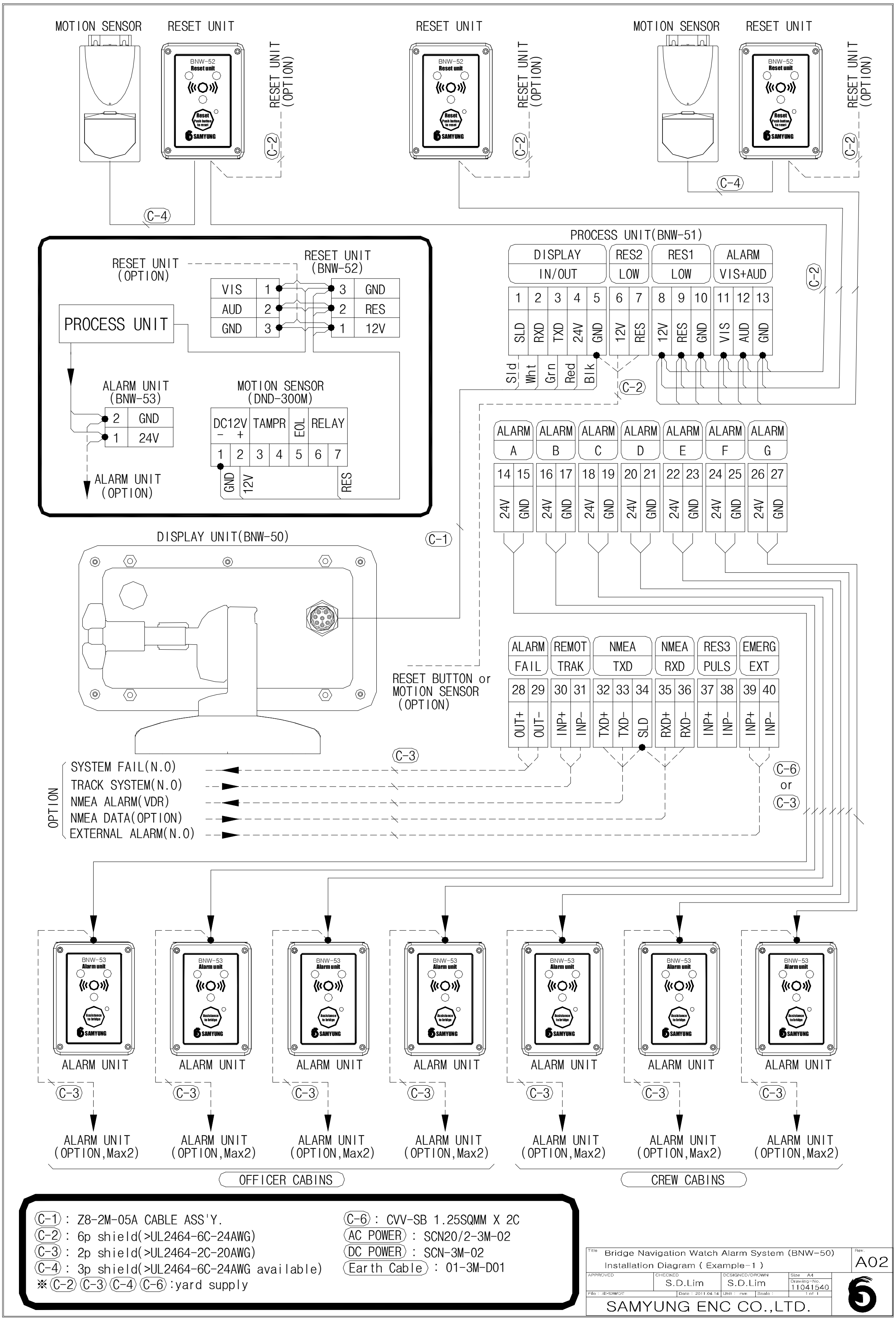
When installing the alarm unit (BNW-53), if the connection cable's length for processor unit and alarm unit is longer than 50m, we recommend you to use conductor bigger than 1.25 ㎟.

CHAPTER 13 DIAGRAMS

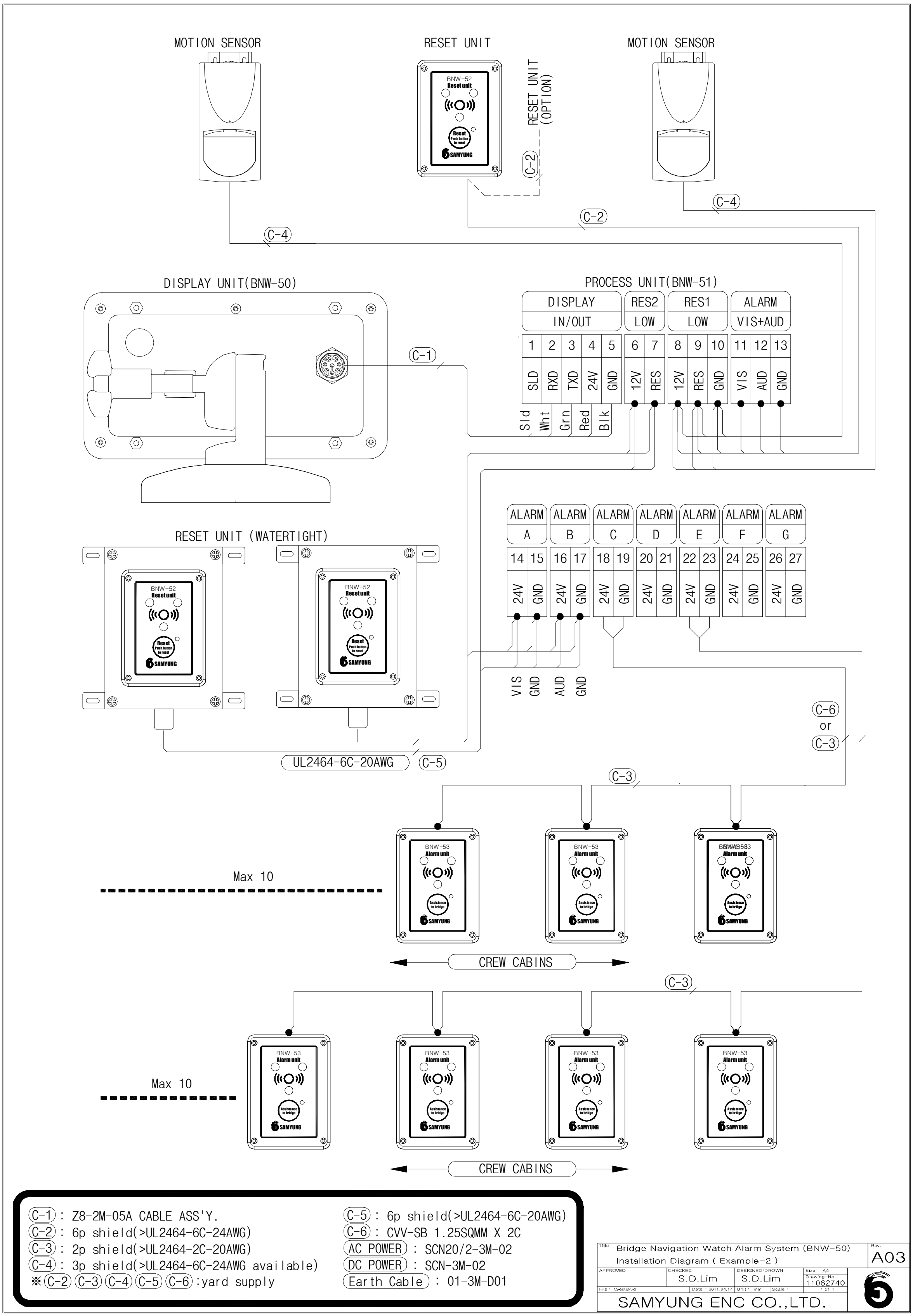
13.1 INTERCONNECTION DIAGRAM



13.2 INSTALLATION DIAGRAM (EXAMPLE-1)

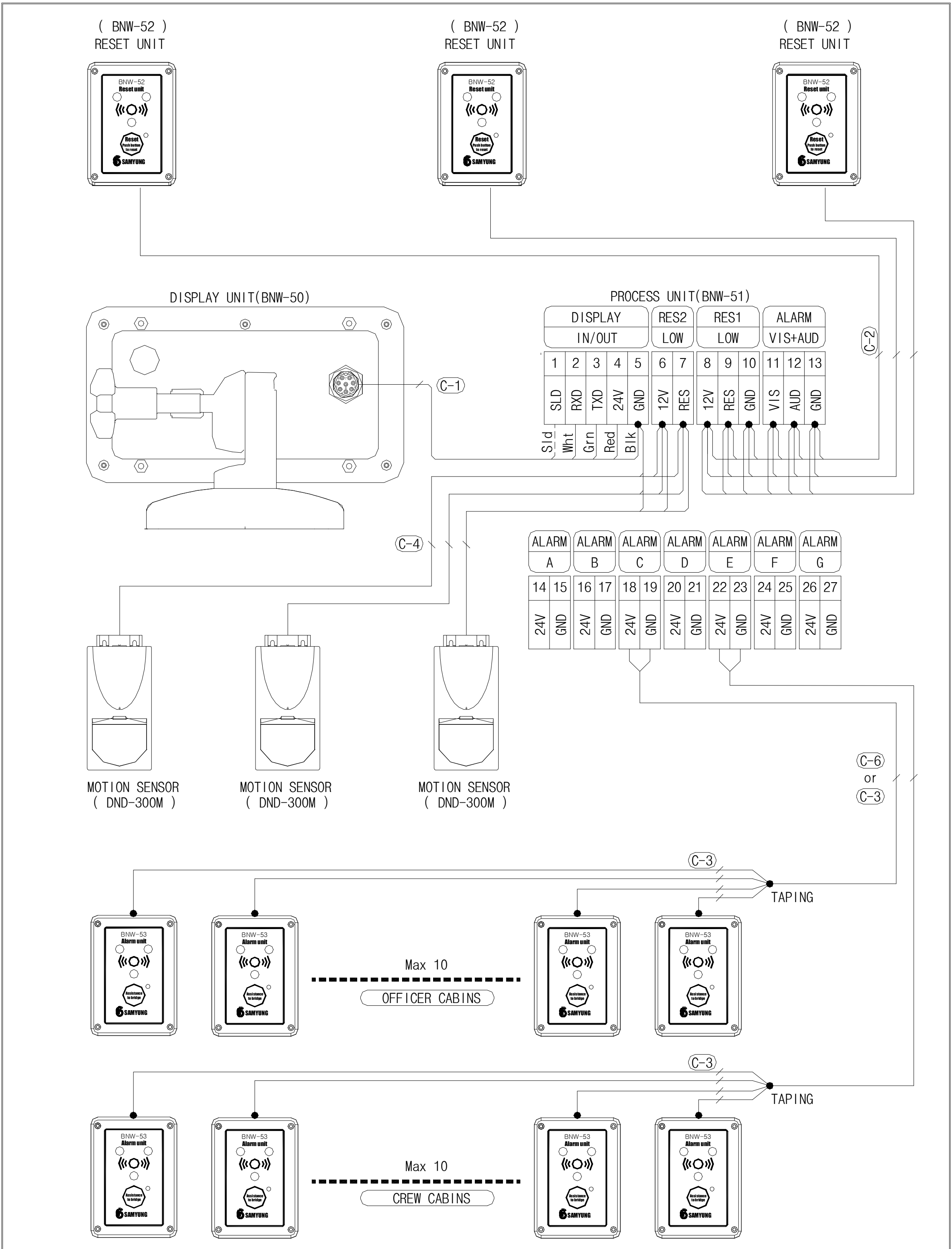


13.3 INSTALLATION DIAGRAM (EXAMPLE-2)



※ Caution : When applied this Installation Diagram(Reset Unit Expansion), you must check “[v] Use Another Visual & Audio”. (Refer to page 22)

13.4 INSTALLATION DIAGRAM (EXAMPLE-3)

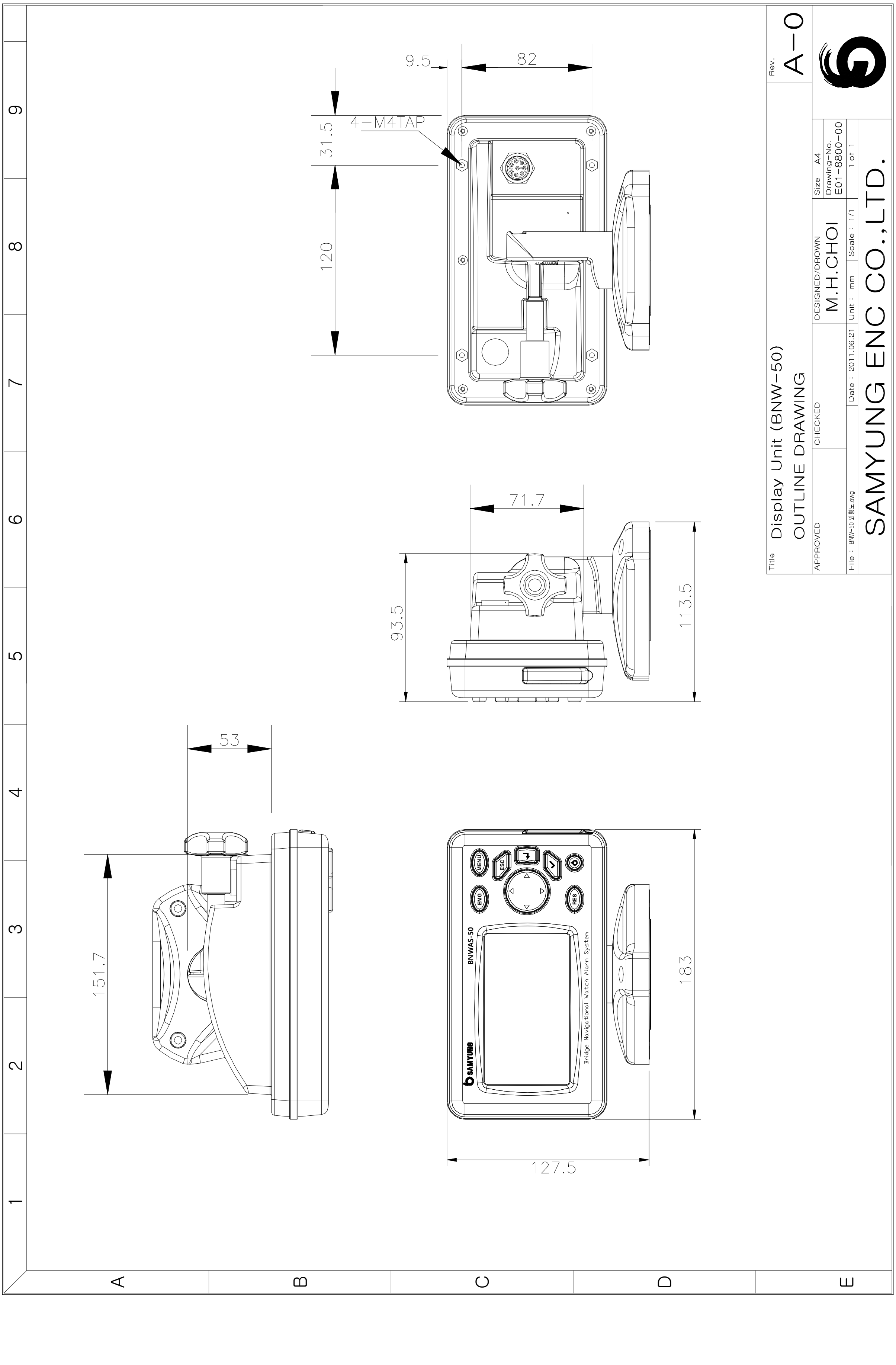


C-1 : Z8-2M-05A CABLE ASS'Y.
C-2 : 6p shield(>UL2464-6C-24AWG)
C-3 : 2p shield(>UL2464-2C-20AWG)
C-4 : 3p shield(>UL2464-6C-24AWG available)
※ C-2 C-3 C-4 C-6 :yard supply

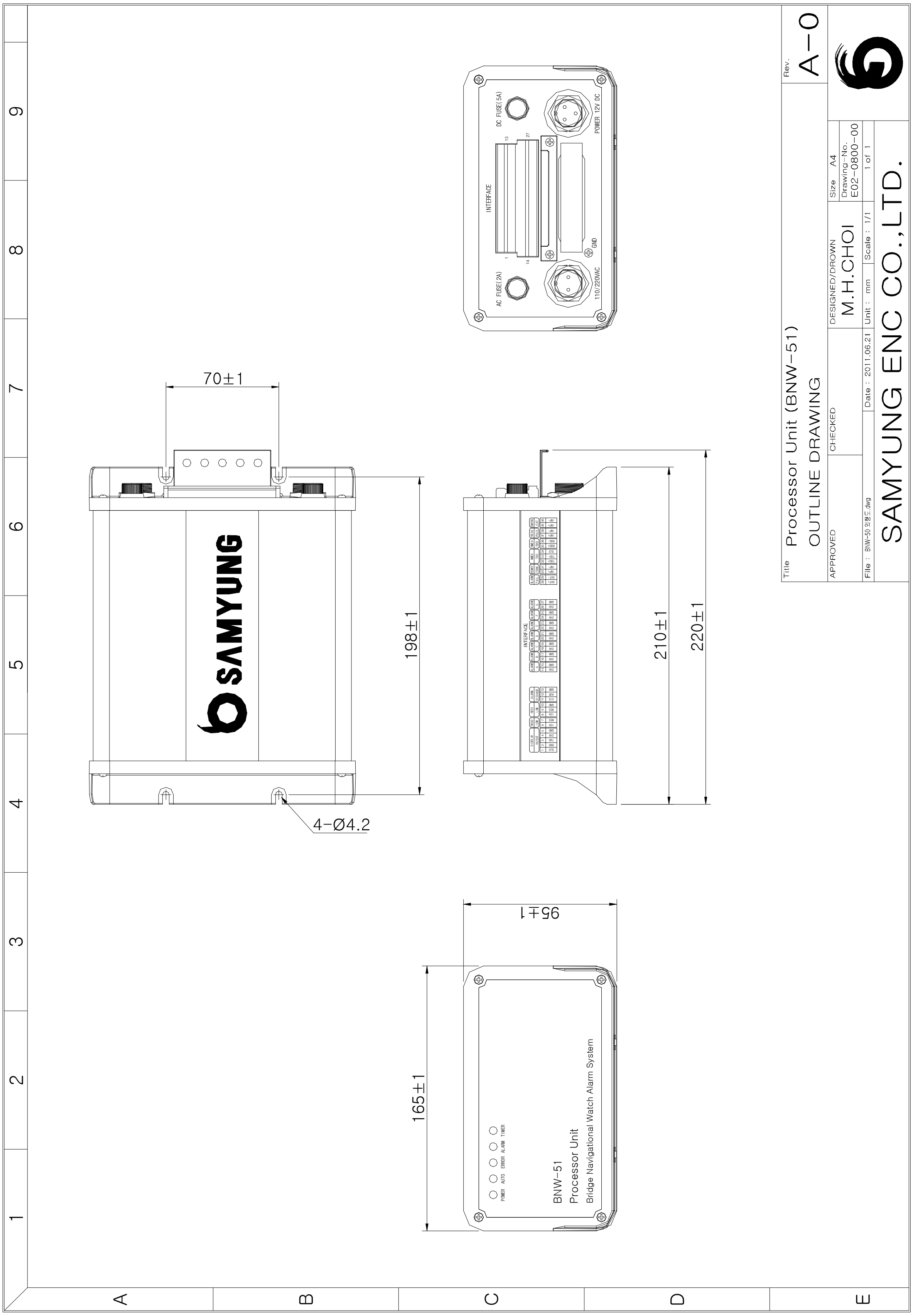
C-6 : CVV-SB 1.25SQMM X 2C
AC POWER : SCN20/2-3M-02
DC POWER : SCN-3M-02
Earth Cable : 01-3M-D01

Title: Bridge Navigation Watch Alarm System (BNW-50) Installation Diagram (Example-3)			Rev. A04
APPROVED	CHECKED S.D.Lim	DESIGNED/DRAWN S.D.Lim	Size A4 Drawing-No. 11070140
SAMYUNG ENC CO.,LTD.			

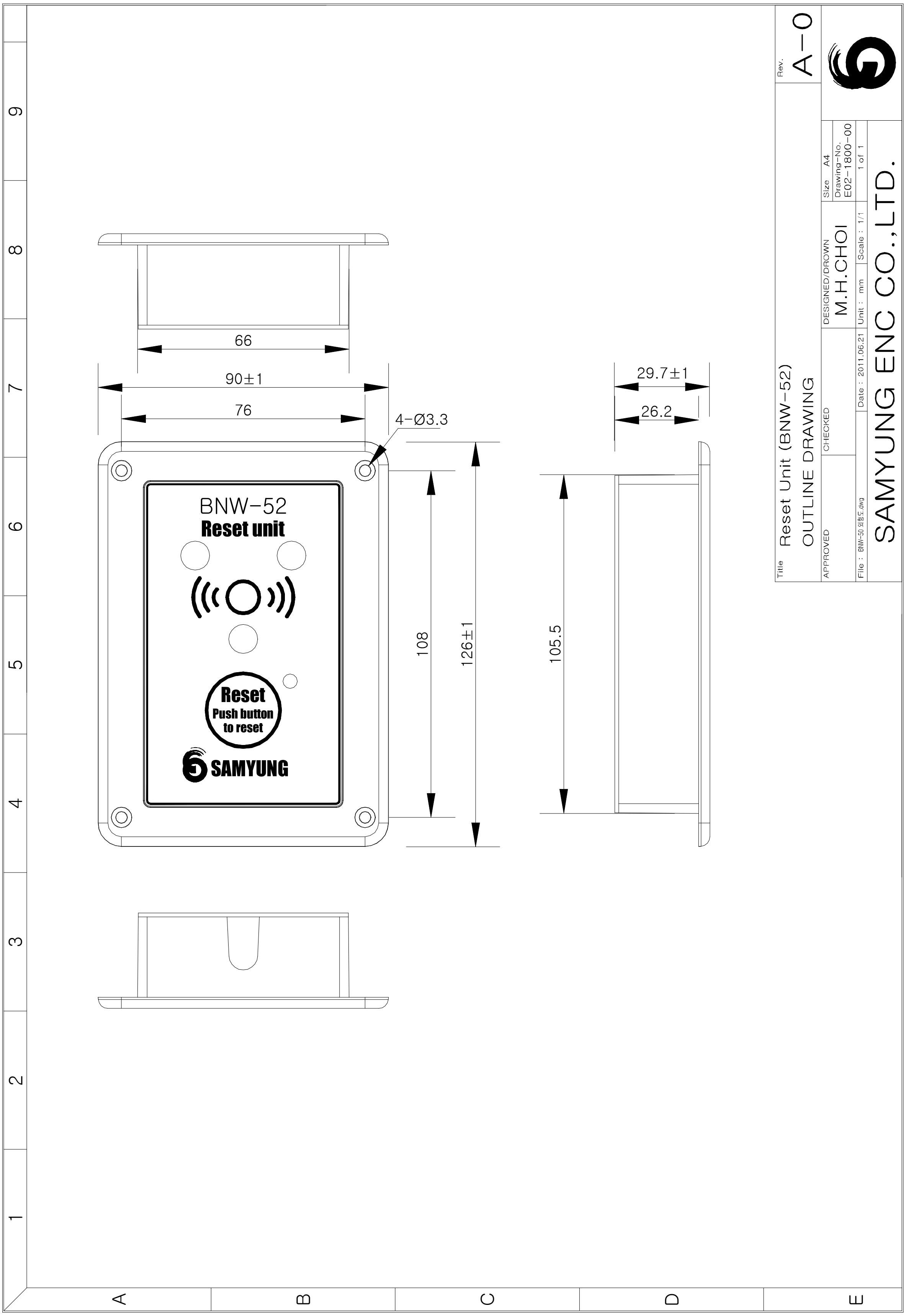
13.5 BNW-50 OUTLINE DRAWING



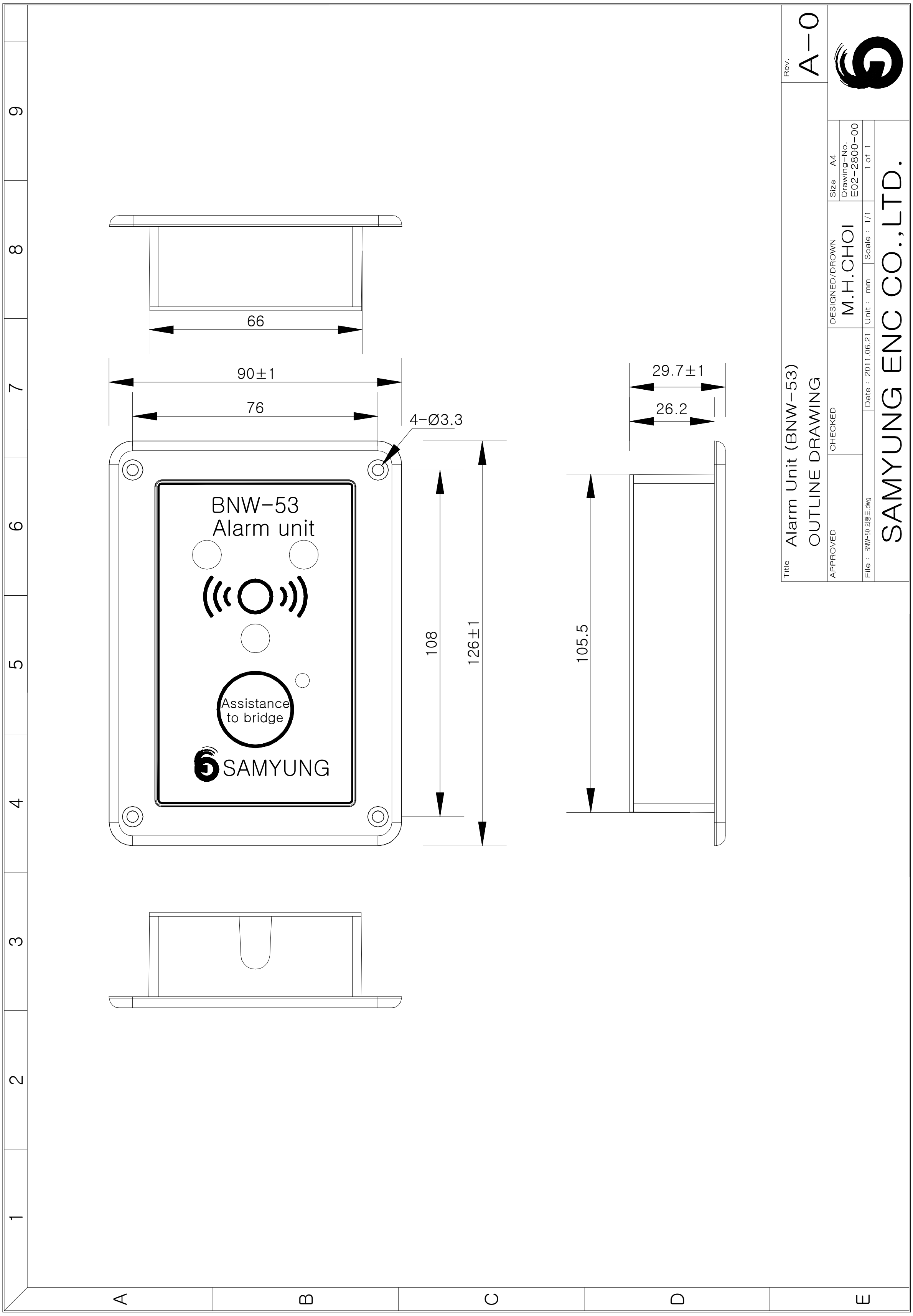
13.6 BNW-51 OUTLINE DRAWING



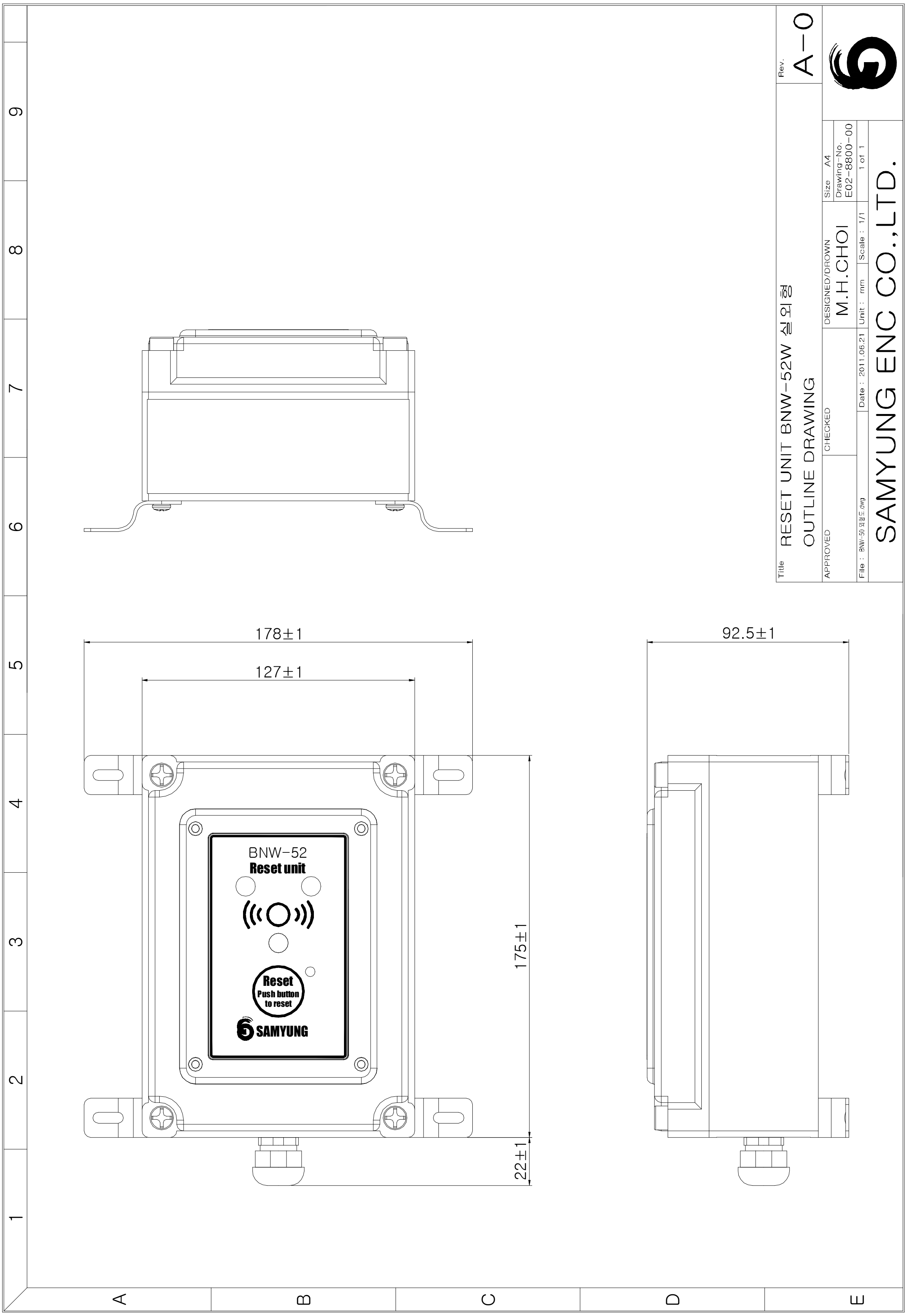
13.7 BNW-52 FLUSH TYPE OUTLINE DRAWING



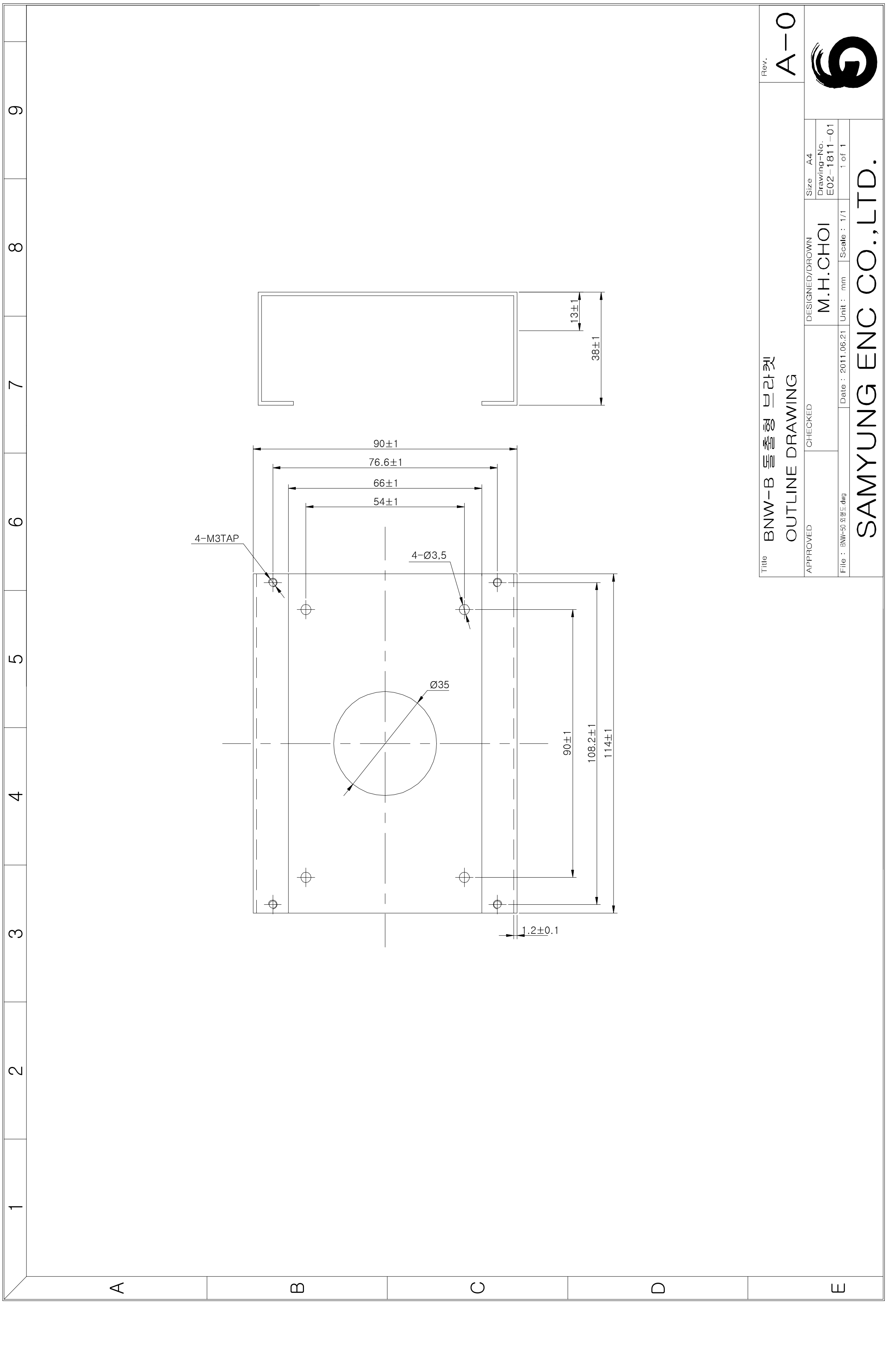
13.8 BNW-53 FLUSH TYPE OUTLINE DRAWING



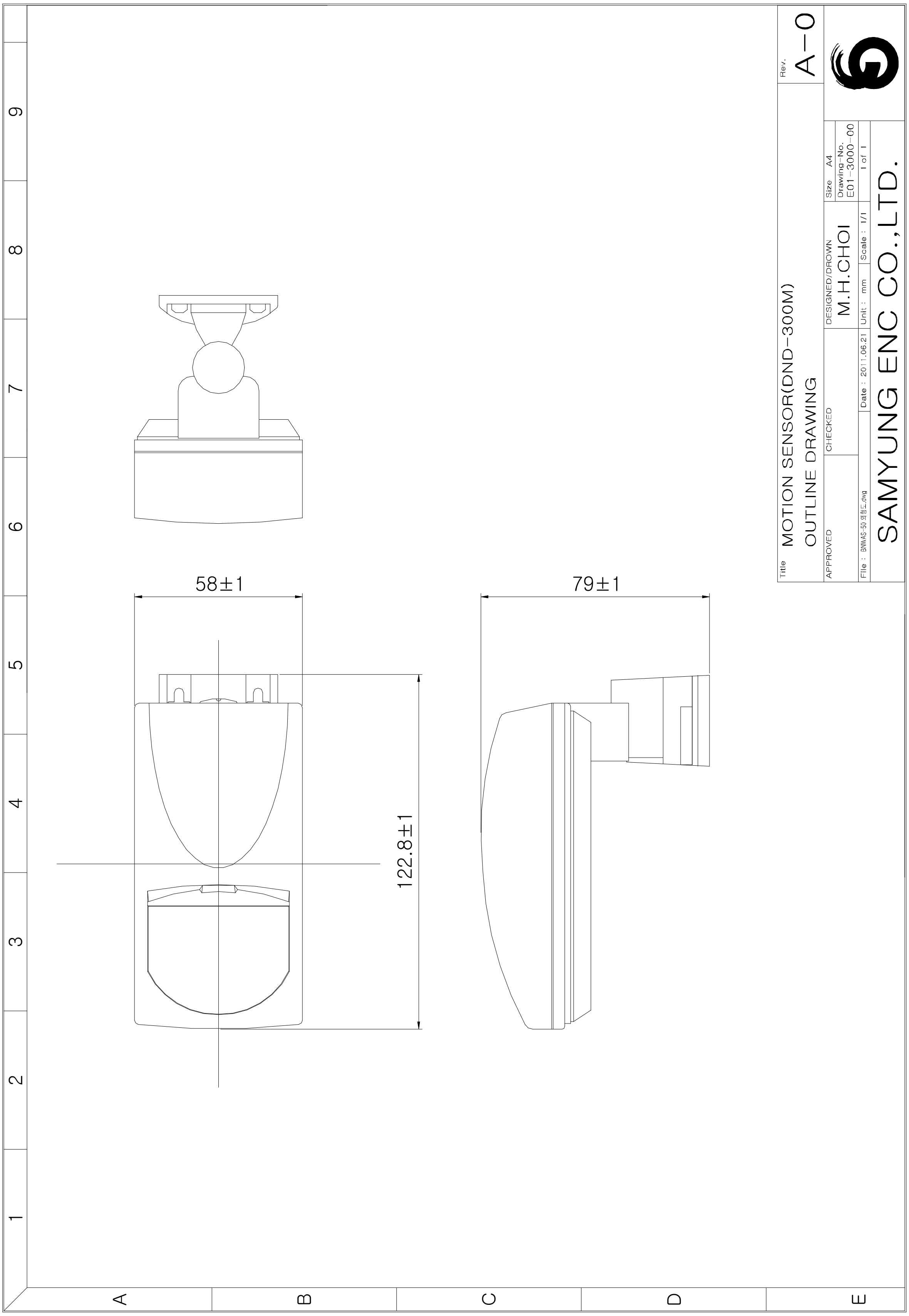
13.9 BNW-52W WATERTIGHT TYPE OUTLINE DRAWING



13.10 BNW-B FLUSH TYPE OUTLINE DRAWING (BNW-52,53)



13.11 MOTION SENSOR(DND-300M) OUTLINE DRAWING



CHAPTER 14 WARRANTY INFORMATION

Thank you for purchasing SAMYUNG ENC LTD's BNW-50. This manual includes the proper way of operating and installing the unit and warnings. Please keep this manual in a safe place. Please pass the manual onto the new owner in case of selling or disposing it.

1 year warranty is given from the date of purchase. BUT break-down caused by the user's inappropriate use will be charged.

HEAD OFFICE A/S	
ADDRESS	**65-20, Namhang-Dong 2 Ga, Youngdo-Gu, Busan, Korea**
COMPANY	**SAMYUNG ENC LTD. A/S TEAM**
CONTACT	**TELEPHONE : 051-416-5516**
	F A X : 051-406-5515
Please send us the model name, serial number and status over the phone or the fax, and we will respond as soon as possible.	

A/S	
NAME	
CONTACT	**TELEPHONE:**
	MOBILE PHONE:
Record the name and contact details of salesperson	